I 29.79/3: G22

Clemson University
3 1604 019 774 456

development concept plan
environmental assessment

PUBLIC DOCUMENTS
DEPOSITORY ITEM
APR 18 1988
CLEMSON
LIBRARY

march 1988

JACOB RIIS / FORT TILDEN
GATEWAY

NATIONAL RECREATION AREA / NEW YORK–NEW JERSEY

Digitized by the Internet Archive
in 2012 with funding from
LYRASIS Members and Sloan Foundation

http://archive.org/details/develogateway00nati

DEVELOPMENT CONCEPT PLAN/ENVIRONMENTAL ASSESSMENT

JACOB RIIS PARK / FORT TILDEN

Breezy Point District

Gateway National Recreation Area, New York

DRAFT
March 1988

U.S. Department of the Interior / National Park Service

CONTENTS

INTRODUCTION / 1

BACKGROUND / 4

PLANNING CONTEXT / 7

Site History / 9
Brief Description of Breezy Point District / 13
    Jacob Riis Park / 14
    Fort Tilden / 16

NEED FOR THE PLAN . . . MANAGEMENT ISSUES / 18

Riis Park Historic Resources / 19
Access and Parking / 20
Park Information / 23
Visitor Comfort / 24
Recreational Sports / 25
Children's Environments and Activities / 26
Fort Tilden East and West / 27

MANAGEMENT OBJECTIVES / 29

ALTERNATIVES, INCLUDING THE PROPOSAL / 33

The Proposal / 35
Alternatives to the Proposal / 53
    No Action Alternative / 53
    1979 General Management Plan Alternative / 53
    1986 Riis/Fort Tilden DCP Proposal Alternative / 55

ENVIRONMENTAL CONSEQUENCES / 57

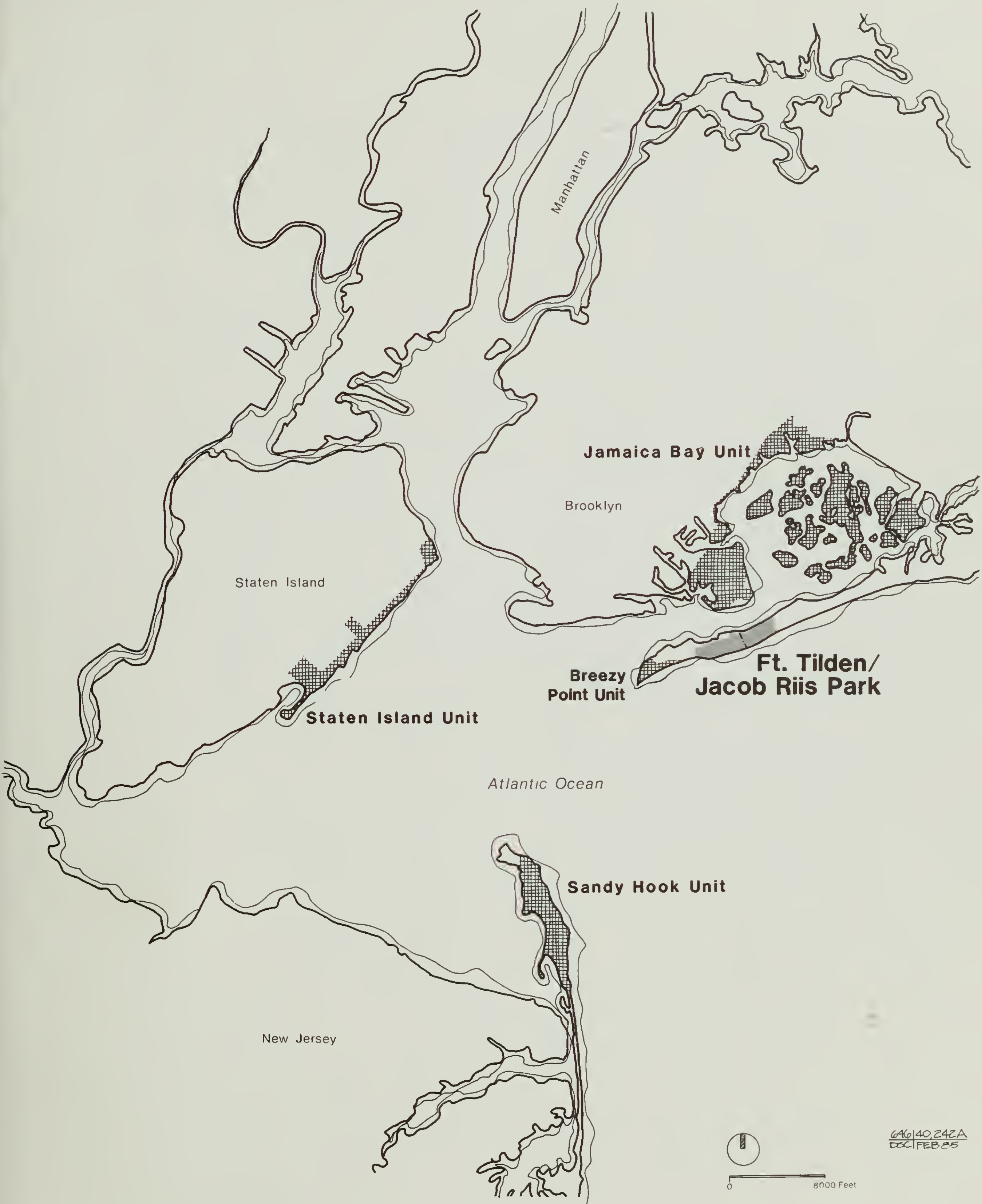
Impacts of the Proposal / 59
Impacts of the 1986 Riis/Fort Tilden DCP Proposal Alternative / 64
Impacts of the No Action Alternative / 69
Impacts of the 1979 General Management Plan Recommendations / 70
Other Compliance Procedures / 71
Coastal Zone Management Consistency Determination / 71

CONSULTATION AND COORDINATION / 75

APPENDIXES / 83

A: National Register of Historic Places Inventory - Nomination Forms / 85
B: Riis Park Traffic Study / 103

BIBLIOGRAPHY / 163



Location Map

United States Department of the Interior
National Park Service

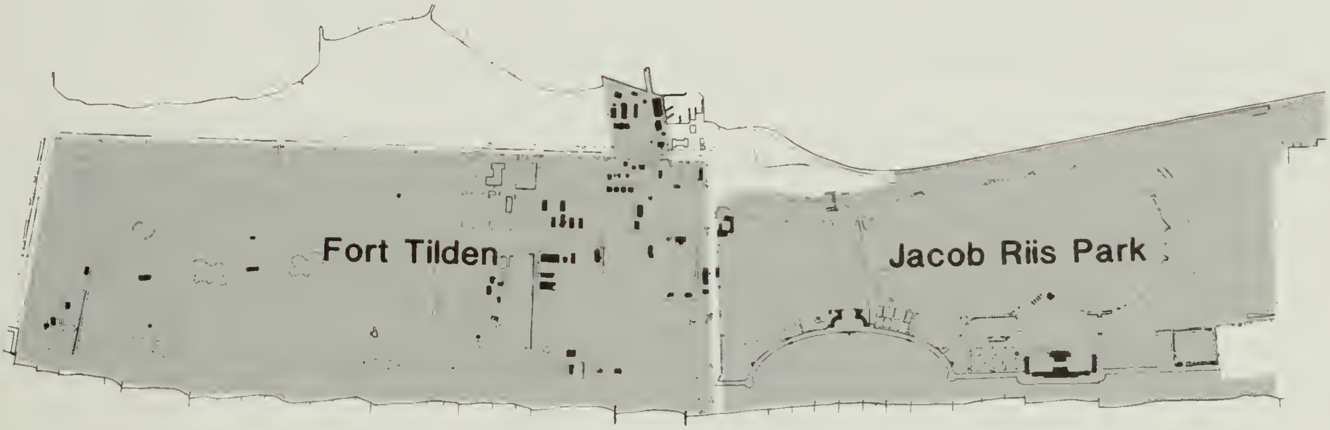
INTRODUCTION

INTRODUCTION

For almost a decade, the NPS has operated the former municipal facility known as Jacob Riis Park, much in the same pattern as it has always been operated. Portions of the facility are aging, use patterns are changing, and the Fort Tilden addition has never been totally integrated in terms of use. This Development Concept Plan (DCP) refines and updates management, park development, and visitor use objectives established in the 1979 General Management Plan for Gateway National Recreation Area (NRA). The more comprehensive proposal made in this DCP will set the stage for site-specific design and management actions and plan implementation. Planning/design guidelines prepared at this stage can be used to ensure continuity, to monitor future implementation, and to conduct post-construction evaluation.

Proposals in this document are limited to those changes that could conceivably be implemented within the next 5-10 years.

This project is confined to those areas of the Breezy Point District of Gateway NRA known as Fort Tilden and Jacob Riis Park as shown on the map below.



BACKGROUND

Gateway National Recreation area was established by an act of Congress on October 27, 1972 (P.L. 95-592; 85 Stat. 1308). The act defined the four units of Gateway, (three in New York and one in New Jersey); provided for land acquisition; and established the Gateway Advisory Commission.

The recreation area has been the subject of a large-scale planning effort which began in 1975 and culminated in August 1979 with the publication of the General Management Plan (GMP) and Final Environmental Statement (FES). Seven documents preceded the GMP and FES: Basic Information released in September 1975, which provided a brief description of the park and region and an outline of the concerns, influences, and goals that were identified in the early stages of planning; Draft Statement of Management, published in April 1976, which included a detailed explanation of the park purpose, significance, objectives and influences; Environmental Assessment, published together with the Draft Statement for Management, which described the park and its setting and presented three alternative planning approaches; Discussion Draft General Management Plan, released in September 1976, which was the first-draft conceptual plan for the park; Here's What We Heard, an April 1977 publication that summarized the comments made by the public in response to the discussion draft plan; and finally the Decisions Paper and accompanying Draft Environmental Statement, made available in April 1978, which documented and assessed the updated plan proposals.

The 1979 General Management Plan established management zones and resource management strategies for the Breezy Point unit, and proposed a program of development. Those proposals are reconsidered in this document, and in some cases new and different actions are recommended based on more current conditions. Changes to GMP proposals are noted and discussed in the Alternatives section of this document.

A Draft Development Concept Plan/Environmental Assessment for Jacob Riis Park/Fort Tilden was completed in February 1986. That document was prepared at the same time that a report on the condition of the Riis Park Bathhouse was being finished. Because the apparent cost to rehabilitate the entire bathhouse was estimated to be at least several million dollars, it was decided that the National Park Service would seek a private sector partner to accomplish the rehabilitation of this historic structure under the Historic Leasing Program.

Although the 1986 DCP did not designate specific uses for the Jacob Riis Bathhouse, it did state that "because of Riis Park's isolated location and the shortness of the bathing season, the economic feasibility of any adaptive use (of the bathhouse) is of some concern. The National Park Service expects to receive and will have to consider some proposals that contain some nontraditional park activities." That document also expressed the hope that a public/private partnership that would be satisfactory to all parties could be established.

After the completion of the 1986 DCP/EA the National Park Service offered a Request For Proposals (RFP) for the adaptive reuse and rehabilitation of Jacob Riis Park. After screening three proposals, the submission from the development partnership of Halper Associates and P. Wallenberg Development Company, Incorporated was accepted as the proposal most compatible with NPS objectives and most economically feasible. After a series of negotiations and revisions to the original submission, the National Park Service is now prepared to recommend a joint plan as described in this Development Concept Plan (revision) as "the proposal."

That proposal is based on the establishment of the public/private partnership envisioned in the 1986 DCP. This partnership will undertake the enhancement of the visitor use experience for Riis Park visitors and the rehabilitation of the park's historic resources including the Riis Park Bathhouse. The proposal does, as predicted, contain some alterations to the traditional use of portions of Riis Park. However, these new facilities, which include an aquatic theme park and a performing arts amphitheater, will be located within a structured recreation management zone as identified in the General Management Plan, will offer park visitors expanded opportunities for recreation activities at the park, and will produce revenues that will amortize the initial investment and contribute to the annual maintenance of the facility.

PLANNING CONTEXT

SITE HISTORY

The western portion of the Rockaway Peninsula (Breezy Point District), which is the site of Jacob Riis Park and Fort Tilden, was formed by the accretion of sand. The area which comprises Jacob Riis Park did not exist above the high water line until the last quarter of the nineteenth century, and much of the Fort Tilden site was tidal marsh at the time of the fort's establishment in 1917.

The defensive and the recreational potential of the peninsula were recognized during the 19th century. During the War of 1812, the army constructed a blockhouse on the west end of Rockaway Beach. Its location was, in all likelihood, to the east of the present day Jacob Riis Park. Grandiose plans for a landscaped park with hotels, pavilions, bathing accommodations, a race course, and a theater on the peninsula were drawn up in the late 1870's. However, these plans were never fully realized. Some development occurred on the peninsula beginning around 1880: a hotel was constructed between the present 111th and 116th Streets (1881); a boardwalk was constructed from Holland to Seaside (1893); an electric trolley line was completed from Far Rockaway to Neponsit (1897), and tents and frame buildings were erected west of Neponsit (ca. 1900).

In 1912, the city acquired the privately held Hatch Tract, intending to establish a public waterfront park near Rockaway Point. Commonly called "Seaside Park", the undeveloped area became known as Telewana Park sometime subsequent to acquisition by the city. After the death of Jacob Riis in 1914, the area was renamed to honor the journalist, author, and reformer who had taken a special interest in acquisition of the park. However, Jacob Riis Park did not become a reality until the 1930's. Before World War I, the city granted a benevolent organization a parcel of land there to construct a hospital for indigent tubercular patients. During the war, military exigencies became a priority item on the Rockaway Peninsula; the navy leased the site in 1917 and constructed Rockaway Naval Air Station at Rockaway Beach in 1918.

A year later, the first successful air crossing of the Atlantic originated from the Rockaway Airfield. The navy began testing four Navy-Curtiss (NC) aircraft in the winter of 1918-1919. Glen Curtiss, the aeronautical engineer who designed this early flying boat, attended the testing program, as well as Richard E. Byrd, who developed the instruments and navigational procedures ultimately used on the successful trans-Atlantic flight. The four NC planes left Rockaway on May 8; only one of them completed the 23-day crossing to Plymouth, England, by way of the Azores and Portugal. Soon thereafter, the navy forfeited the Rockaway lease. In vain they sought permission to use Miller Field (Staten Island), then underutilized by the army. The navy did not have another permanent station in the vicinity until 1941, when it moved to Floyd Bennett Field.

When New York City reacquired the area in 1923, it began to stabilize the future Riis Park lands with a system of groins attached to the bulkhead at the eastern end of the property. In 1927, city engineers installed a similar system at the western end. The city began construction of a bathhouse at Riis Park in 1931, and an ambitious program of recreational development took place there during the following six years. Much of this development was accomplished with Works Progress Administration funding and labor under the administration of Robert Moses, who had become Commissioner of the New York City Department of Parks in 1934. Playgrounds; handball courts; parking facilities; beach shops and food bars; lockers and showers; a boardwalk and promenade, areas for ping pong, horseshoe pitching, paddle tennis and shuffleboard; and an 18-hole golf course were opened to the public in 1937. On July 3 of that same year the Marine Parkway Bridge was dedicated, putting Riis Park within a 45-minute drive of most of Brooklyn and an hour from Manhattan.

The present Fort Tilden site was acquired by the government in 1917. In the mid-nineteenth century, the Treasury Department requested transfer of the property for the Rockaway Point Lifesaving Station, which moved from Barren Island to Rockaway Point. The secretary of war approved the transfer, asserting that the area could still be fortified by the military if the need arose. Little is currently known about the location of a series of lifesaving stations on Rockaway Point. Federal personnel probably opened the first station on the point in the mid 19th century and operated the facility until well into the 20th century. The men who manned the station were known to have rescued sailors and salvaged merchandise from a number of ships that ran aground in the nineteenth century.

The army commissioned Fort Tilden on February 19, 1917. It was officially named for the former New York governor and 1876 Democratic presidential candidate Samuel J. Tilden. The military assigned the fortification a coastal-defense mission. By March 1917, platforms for four 12-inch coastal guns were under construction: within a month, four 6-inch guns, a searchlight, watchtowers, and other structures were being erected. By December 1917, cantonment buildings were under construction. Virtually no military action occurred at this point during World War I.

During the 1920s, the army began to pour a great deal of money into the Tilden construction projects, which continued until the 1950s. In May 1920, an army inspection team reported that four officers and eighty enlisted men served at Fort Tilden. In 1922, New York requested that the army cede 94 acres of the post's property to the city for expansion of Jacob Riis Park. Despite the fact that only a caretaker force occupied the fort, the War Department replied that it considered Tilden an "active post not having been abandoned."

A new designation concerning the post's mission took place in the early 1920's when Fort Tilden was withdrawn from the coast defenses of southern New York and assigned to the coast defenses of Sandy Hook, New Jersey. This reassignment made geographical as well as logistical sense. Sandy Hook projects outward from the New Jersey coast in a gentle northwest arc, while Rockaway Point projects southwest from Long Island. Forts at these two sites, on either side of the New York Harbor entrance, would help protect the harbor.

During World War II, coastal defenses were strengthened along the Atlantic seaboard including Fort Tilden. An ambitious program of construction included new quarters to house a significantly expanded military staff and ancillary buildings. Gun emplacements underwent extensive remodeling to meet the demands of advanced technology in weaponry.

The post remained active in the cold war years. The army constructed surface-to-air missile silos and radar stations in three areas of Fort Tilden during the 1950's. By 1967, however, the weaponry at Fort Tilden had become obsolete and the installation was subsequently decommissioned.

BRIEF DESCRIPTION OF BREEZY POINT DISTRICT

The Breezy Point District, which lies south of Jamaica Bay on the western end of the Rockaway Peninsula, contains approximately 1,600 acres and 4½ miles of ocean beaches. Included in this district are the popular Jacob Riis Park, the lands and facilities at Fort Tilden, and the beach front properties to the immediate east of the Breezy Point cooperative.

All city lands, specifically Jacob Riis Park, West Beach, and the Breezy Point Tip, have been transferred to the National Park Service. New York City retains jurisdiction over the major roads in and around Riis Park, and a right-of-way extending 10 feet south of this road.

The National Park Service exercises concurrent law enforcement jurisdiction over those lands formerly owned by the city and the Army.

The vegetation of the undisturbed areas within the Breezy Point District is typical of barrier beaches in this region. The western portion of the Fort Tilden area contains several vegetation types. The 1-mile long ocean beach is backed up by a narrow primary dune system, on which the dominant vegetation is the beachgrass/dusty miller/seaside goldenrod association. Behind these dunes are open grasslands, high and low thickets (scrub/shrub), coniferous and deciduous woodland, and isolated stands of phragmites (reeds). The U.S. Fish and Wildlife Service has identified a wetland in the northwestern corner of Fort Tilden, which consists of the phragmites area and part of the scrub/shrub and deciduous forest area. Vegetation in Fort Tilden is a combination of native and introduced species, including bayberry, wild rose, poison ivy, Virginia creeper, autumn olive, Japanese black pine, eastern white pine, and white poplar. The woodland areas are primarly at the higher elevations where the sand dunes have stabilized.

Particularly fragile and/or significant natural features include the remaining primary dune systems and the woodland complex within Fort Tilden, which contains a large percentage of conifer vegetation. This area is particularly attractive to migrating raptorial birds, which rest and feed on small mammals there.

The U.S. Fish and Wildlife Service has determined that, except for occasional transient wildlife, no federally listed or proposed endangered or threatened species under their jurisdiction are known to exist in the project area. The bald eagle and peregrine falcon, which are listed as endangered, may migrate through the project area but do not nest there.

Other species of concern that may exist in the vicinity of Riis Park and Fort Tilden, although they are not known to nest there, include one species listed by the state as endangered--the least tern, three species listed by the state as threatened--the osprey, northern harrier, and common tern; and two species listed by the state as special concerns--the common barn owl and short-eared owl. The diamondback terrapin is also known in the area and is listed by New York State as a special concern.

Ocean-borne sand has a tendency to move westward along the Rockaway Peninsula, despite the groins and jetties that have been built to retard this process. This littoral drift is removing sand from the beaches to the east, including Riis Park and Fort Tilden, and causing accretion of the beaches at the Tip.

JACOB RIIS PARK

Site Description

Initially developed by the city of New York (circa 1930), Jacob Riis Park features 1 mile of ocean beach and a highly developed back-beach area. The beach is divided by wooden pilings and rock jetties, into 14 bays. In the back-beach area is a concrete boardwalk extending the full length of the beach. Centrally situated is the historic Riis Bathhouse which was originally developed with public shower and locker facilities. These facilities are now closed because of health and safety reasons. Currently, the bathhouse provides lifeguard facilities, restrooms, a ranger station, a park police substation, a first-aid station, food concessions, chair and umbrella rental, and maintenance storerooms. The bathhouse is flanked by basketball, paddle-tennis and handball courts, ballfields (one of which is lighted), and play equipment. Two historic structures in the mall area house food concessions, chair and umbrella rental, restrooms, and first-aid facilities. In addition to these larger facilities, there are 3 small food concession stands along the boardwalk. Completing this intensely developed back-beach area is an 18-hole, par three golf course. An approximately 9,000 car parking lot covers the remainder of the site. Riis Park was placed on the National Register of Historic Places on June 17, 1981 (see Appendix A for documentation).

User Groups

The attributes of the New York population are important determinants of how Riis Park functions. This population is a conglomerate of widely diverse groups, differing in age, income, race, ethnicity, values, and activity preferences. Its diversity is reflected in the user groups at Riis and is quite different from the typical image of users of other national parks. Riis Park serves groups of people under conditions of tremendous density, another characteristic typical of urban situations and different from most national parks.

Provided they can be part of a smaller, similar group of people in an identifiable location, urbanites are remarkably tolerant of the diverse values of other groups. Over the course of many years, subareas of Riis Park have evolved as places where people of similar backgrounds and values gather. The resulting social ecology is as important to the success of a dense urban recreation center as the ecosystem is to a natural environment.

User groups situate themselves both spatially and temporally within specific sections of the park. The territorial limits are both east-west as roughly defined by the jetties (bay 1 through bay 14), and south-north as determined by beach, boardwalk, sports areas, and landscaped areas. Most groups establish a homebase in one area from which they come and go during the day to use specific facilities or attractions throughout the park.

Family groups are generally less mobile than most other users because of their need for a permanent beach space, which is especially important when the area becomes crowded. The elderly also tend to remain in one place while at the park. For singles or small groups, permanence is less important; strategic locations gain precedence. Small groups often move several times to gain better positions on the beachfront.

Certain areas attract certain age groups. Adolescents and young adults may wander to the basketball courts or congregate on the boardwalk. Families as units play few games, and ocean wading is their most prevalent group activity. Two playground areas near bays 2-3 and 5-6 are provided for children. Shaded locations near open grassy areas are most popular with family groups.

Approximately 2,175,778 people visited Riis Park in 1987. Visitation has fluctuated from a 1983 high of 3,985,703 visitors, to a low in 1986 of 2,159,715 visitors, with only a slight increase in 1987.

FORT TILDEN

Site Description

A long-established army post, this area of the unit lying immediately west of Riis Park possesses a mixture of natural areas and assorted military structures of different historic eras. The 1-mile long beach is used by fishermen and special-interest groups under park permit. Existing beach facilities include two picnic pavilions adapted from former buildings and a reconditioned restroom building. North of the beach are bunkers, missile sites, radar installations, and a collection of army support structures such as sentry huts, dog kennels, concrete foundations, sanitary sewers, and telephone pits in various stages of decay.

The core area at Fort Tilden, which contains many former military base buildings (recreation buildings, a theater, barracks, storage structures, etc.), is the site of the unit's headquarters. Several brick residences and a duplex provide housing for NPS personnel. Partially encircled by this residential complex are two tennis courts, a basketball court, and a parade ground, now used as an open-space facility. A portion of Fort Tilden was listed on the National Register of Historic Places on April 20, 1984 (see nomination form in appendix A.)

User Groups

Patterns of park use are much less complex at Fort Tilden than at Riis Park. Obviously there is no long tradition of public use of the area since it was a military reservation until it became part of Gateway in 1974. In addition, few recreation support facilities and limited parking for private automobiles have kept the volume of use at Fort Tilden relatively low. The influence of natural and cultural resources at Fort Tilden affect the kind and amount of use for which specific sites are suited.

The primary focus of park programs is environmental education. Picnicking and resource-related outdoor recreation activities are also encouraged, and some active sports activities are permitted on a reservation basis. Both cricket and rugby clubs regularly use the open space formerly used as parade grounds and drill fields by the army. Fishing is another activity popular along Fort Tilden's beach, although observation quickly reveals that interspersed with the serious fishermen are sunbathers.

When the program is fully funded, about 18,000 schoolchildren (New York City schools) visit Fort Tilden during the school year to participate in environmental education activities. Park naturalists conduct guided programs suitable for elementary and secondary schoolchildren throughout the year and offer additional programs during the summer for children and adult groups, including the following:

> Environmental Arts and Crafts - These programs provide the opportunity to learn new crafts using natural and man-made materials. The projects are used to instruct participants about their environment (ages 5 and up).
>
> Senior Citizens Resource Center - The center offers a shaded outdoor area just a few minutes walk from the ocean. Public tables, barbeque grills, and indoor shelters with kitchen and restroom facilities are available on a daily basis.
>
> Adaptive Aquatics - Handicapped groups can learn about the marine environment and get into the ocean waters with the help of skilled NPS personnel.

Teachers and classes who wish to explore the ocean or bay on their own may do so on a reservation basis. Each semester the interpretation staff conducts a four hour workshop designed to prepare teachers to lead their own environmental walks. The aim of the workshop is to familiarize the teachers with the ecology of the area, to refine all the logistical planning for the class trip, and to equip the teacher with hands-on activities that can be used to enhance the learning experience for their students.

Organized youth groups are permitted to camp overnight at Fort Tilden in a designated area. These groups must supply their own camping equipment, and their leaders must meet the district's camping experience requirement.

The Gateway Consortium, an organized association of youth groups, conducts summer day camp programs at Fort Tilden. The consortium coordinator distributes information to user groups and schedules their visits. They contribute toward the maintenance of the structures, and are the sole users of them, although the programs only operate during the summer.

During the summer approximately 12,000 visitors participate in day camp activities. Although most time is spent on the beach, they are also involved in environmental education, recreation, and arts and crafts activities. The park helps the consortium conduct programs in environmental education, and arts and crafts.

Overall attendance figures at Fort Tilden are approximately 100,000 per year.

NEED FOR THE PLAN . . . MANAGEMENT ISSUES

MANAGEMENT ISSUES

RIIS PARK HISTORIC RESOURCES

Jacob Riis Park is a designated historic district representative of public park development in this country and was listed on the National Register of Historic Places on June 17, 1981 (see Appendix A). Riis Park was listed because its buildings and grounds have survived relatively unaltered since 1937, and they remain good examples of the prevalent aesthetic design of the 1930s. Therefore, the entire facility, including the landscape design is considered an historic resource. The bathhouse is probably the park's most significant single feature due to its visual dominance, central location, and its role as focal point for recreational services. It is also the facility most in need of intensive rehabilitation.

The 1986 Historic Structures Report, Architectural Data Section, Jacob Riis Bathhouse Exterior and the Existing Conditions Report for the Jacob Riis Bathhouse (Beyer, Blinder, Belle, 1984) document the condition of the bathhouse complex. According to the reports, the cumulative effects of the harsh maritime environment and deferred maintenance have left building finish and structural elements in various stages of deterioration. Structural damage has occurred where thermal forces have caused uncontrolled cracking due to the lack of sufficient vertical control or expansion joints. Cracking at the Beach Pavilion is extensive, moderate at the Entrance Pavilion, and almost negligible at the East and West Wings and court-enclosing walls.

It is noted that water damage varies and is prevalent throughout all the buildings, with the Beach Pavilion being the worst. In general, water damage at the exterior masonry walls is evidenced by cracked and spalled brick cracked and spalled cast stone detailing with exposed rusted reinforcing bars, cracked interior glazed tile, and rusted masonry pier anchors and lintels. Water has damaged the Beach Pavilion concrete canopies causing cracking and spalling and exposure of some reinforcing bars. Roof gutters at the east and west wings are leaking, causing sections of the wooden eaves to rot.

The mechanical system is in generally good condition throughout the complex. However, the entire electrical system, with the exception of the conduit buried in concrete, needs to be replaced. It should be apparent from this summary of the Existing Conditions Report that if the bathhouse is to be saved, extensive and costly repairs will be required.

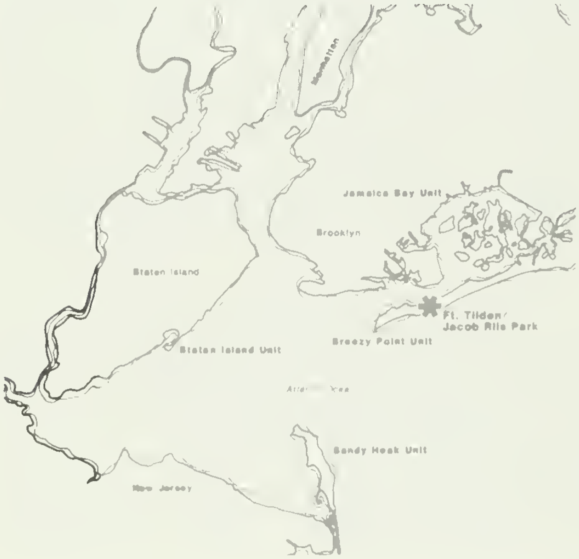
The Beyer, Blinder, Belle report estimates that the minimum investment required to make only the most necessary repairs and improvements to the Bathhouse is roughly $500,000 (1985 dollars). Even at that sizeable amount, most of the building complex would need to be "mothballed" or sealed off from public access. The "mothballing" of areas under this minimum investment would include the Entrance Pavilion and the entire second floor of the Beach Pavilion. The cost of more substantial repairs and improvements could range from $2 million to $7 million depending on the extent of change envisioned.

In addition to the bathhouse, the park's game courts, playgrounds, sidewalks, parking lot, and landscaped areas all have deteriorated and require repair and restoration.

Given the sizeable cost, the National Park Service probably cannot finance major rehabilitation and on-going operation of Jacob Riis Park. The rehabilitation of the Jacob Riis Park depends on the ability of the National Park Service to acquire a private sector partner to join in the rehabilitation and adaptive use of the facility.

Because of Riis Park's isolated location, and the shortness of the bathing season, the economic feasibility of any adaptive use of the bathhouse alone is of some concern. The National Park Service will have to consider proposals that contain some nontraditional park activities.

ACCESS AND PARKING



Jacob Riis Park is about 25 driving miles from midtown Manhattan. The major mode of access, used by about 84 percent of park visitors today, is the automobile. About 16 percent of current visitors arrive by public transportation.

Automobile Access

Flatbush Avenue and Cross Bay Boulevard provide north/south access to Rockaway Peninsula and Jacob Riis Park with toll crossings over Rockaway Inlet and Broad Channel, respectively. Each of these arterials has full access to the Belt Parkway in each direction as well as continuing further into the central portions of Brooklyn and Queens. Traffic using Cross Bay Boulevard to the Cross Bay Bridge must then use one of several east/west streets to access Riis Park, with Beach Channel Drive being most direct off the bridge. Access via Flatbush Avenue and the Marine Parkway Bridge is the most direct north/south access to the park.

The Marine Parkway Bridge has variable direction lanes, with additional lanes provided for peak inbound or outbound vehicular flows, while the Cross Bay Boulevard Bridge has three lanes (nonvariable) in each direction separated by a raised median.

Access into the beach parking area is funneled into a single toll plaza slightly west of the Rockaway Beach Boulevard traffic circle. The plaza at the parking area generally operates with a maximum of four toll booths, although a total of six booths exist. Traffic movements approaching the plaza can be somewhat congested when traffic volumes are high from the access roads leading to the park. The parking area contains approximately 9,000 spaces.

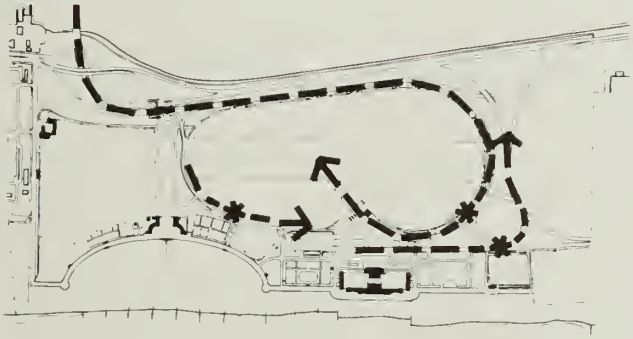
Figures 1, 4, and 7 in Appendix B show 1987 summer Sunday volumes and a.m. and p.m. peak hour travel conditions.

There are advantages for people of the metropolitan areas who have access to an automobile. One is economic -- the cost per trip is $5.00 per automobile for bridge toll and parking fee regardless of the number of passengers, whereas round-trip costs are usually $4.00 per person for public transportation from most city locations. The automobile also makes it easier for people to bring recreation equipment to the park.

The transition from a car to the park is difficult and hazardous. Those people who have much equipment to unload have only one designated drop-off zone available in front of the bathhouse. Although the concept is good, the location is not close to where many people settle. Therefore, many people stop inside the parking lot on the southwest corner, where space is inadequate, for unloading equipment and passengers.

There are also problems for people who park their cars and make their way to the park. Pedestrian exits from the lot are not marked, are not visible from a distance, and are not always related to pedestrian paths within the park. The orientation of the parking rows requires most pedestrians to cross several aisles of traffic after finding a place to park.

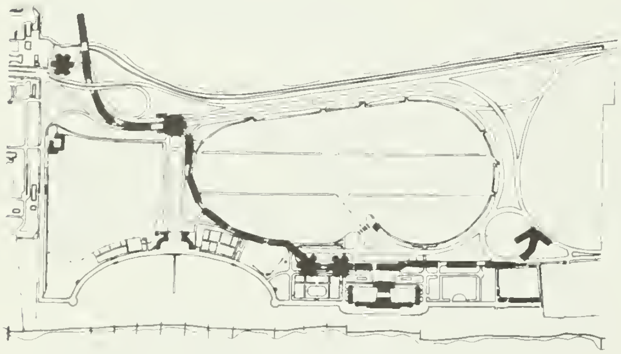
Along the southern edge of the lot there are two areas of major conflict where pedestrians must cross a steady stream of traffic. On the southwestern half the conflict is inside the lot, and most intense on weekend afternoons because pedestrians entering or leaving the park must cross all traffic headed toward the automobile exit. On the southeastern half the conflict is outside the lot where pedestrians headed toward the eastern part of Riis must cross all traffic entering and leaving the parking lot. Although there is an underpass on the eastern end of the bathhouse, one Sunday between 500 and 1,000 people were counted crossing a steady stream of traffic.



The parking spaces in the lot closest to the beachfront areas frequently approach capacity shortly after 12:00 noon. The remainder of the lot reaches a peak accumulation of approximately 60 to 75 percent between 2:00 and 3:00 p.m. on peak weekend Sundays before beach visitors begin to leave the park.

Bus Access

Getting to Riis Park by public transportation is difficult, requiring several changes of subway and bus. For most people in New York City to reach the park by public transportation, they must take the subway to the Flatbush Avenue stop at the end of an IRT line in Brooklyn. This station is relatively easy to reach from Manhattan and Brooklyn. From here people must transfer to a bus going to Riis Park. There are no signs in the subway station informing people how or where to make the transfer.



Although there are four bus stops used by people arriving at Riis, only two of them are clearly associated with the park. The first stop, immediately after the Marine Parkway Bridge, gives no indication that it provides access to Riis. Passengers who get off here tend to be young people who are headed for the western end of the beach and who already know they must cross the highway and walk a half mile down a service road. There are no directional signs available. The second stop is at the end of the mall and is relatively unused. The third and fourth stops are centrally located near the bathhouse and are the most heavily used. The eastern end of the park does not have a stop.

There is no information telling visitors where they are in the park after getting off the bus, what facilities are available, or where to catch a return bus home.

For the return bus trip there are only two locations just west of the bathhouse where people can board. This bus stop consists of a maze of steel piping for keeping people in line while they wait. There is no place to sit and no shelter from sun or rain. In recent years, bus service has been frequent enough that only one of the five aisles of the maze is ever filled with waiting people. On a typical Sunday between 60 and 70 people were observed waiting at this bus stop at any one time.

Characteristics of bus riders do not vary greatly from those who arrive by car. In both cases about half come in groups of three or less. The greatest noticeable difference is that bus riders do not bring much equipment compared to car riders. They tend to bring no more than a satchel and towel, although occasionally people bring folding chairs and beach umbrellas.

Bicycle Access and Circulation

Although cars and buses are used simply to deposit passengers at the park, bicycles can be used either to get someone to the park or for recreational riding in the park.

The major access for bicycles, as for vehicles, is from the Marine Parkway Bridge. The only nonvehicular path on the bridge is a 6-foot-wide walkway about 20 inches above the road surface on one side of the bridge. This is used by pedestrians and cyclists going in both directions, although signs instruct people to walk their bicycles.

Once across the bridge, it is not apparent how to get to the park. The safest and most direct route is not the same as the vehicle entrance route. Instead of taking the highway, it is better to take the westbound local road, cross it at the traffic light, and enter the park through Fort Tilden and down 169th Street or along the northern edge of the golf course.

Because bicycles are portable and easily stolen, people keep them close by and, as a rule, leave them in bicycle racks only if the racks are visible from where they are stationed. The only bicycle rack at Riis which is consistently used is located at the extreme western end of the boardwalk where many young people congregate. Other bicycle racks are not visible to active use areas and are usually empty. However, frequently observed bicycles are inside sports areas, locked to chain link fencing, or locked to the boardwalk railing. Compared to the standard bicycle racks at Riis, fences and railings are more secure places to lock bicycles because it is possible to lock the frame itself to a support.

Within the park, cyclists may ride on foot paths and service roads marked as bikeways, but must walk their bicycles in all other areas of the park. Recreational riding is not particularly good within the park because the distances are short and the paths are frequently crowded, and segmented.

Few bicyclists come to Fort Tilden as a destination. Those that do, however, enjoy use of the road network to reach the quieter more natural dune and bunker landscape, and beach.

PARK INFORMATION

The ease of acquiring information and its applicability to the particular user's needs are the critical characteristics of a park's information system. Park users typically need three different kinds of information while visiting a national park. These include: (1) "navigational" or wayfinding information--signs, landmarks, paths, maps, staff, etc. that make it possible for people to find places they are looking for; (2) activity information--brochures, signs, newsletters, or other methods that tell people about what they can do in the park and any other information that would help them to participate in specific activities; and (3) interpretive or educational information -- all the best media and presentation methods that national parks use to enrich the recreational visit by sharing knowledge about the significance of places, processes, people and/or events. There is a tendency to concentrate attention and resources on the last type of information, relegating the others as collateral duties. The result is omission, inconsistency, and/or contradictions, leaving park visitors uninformed about opportunities at the park.

The system of providing users with information about Riis Park, from how to get there to how to find the restrooms, can be improved. People need directional signs when arriving by car, bicycle, or subway and bus; directional signs for car drop-off areas and at entrances to the park from the parking lot; maps showing locations of facilities within the park; sign identification of facilities and concessions; and information about programs and activities available at Riis Park, Fort Tilden and at other areas of Gateway National Recreation Area.

The lack of information has, in the past, been relatively unimportant because Riis has been a self-contained entity patronized by regular users. However, as new users are attracted to Riis as a unit of Gateway and the rest of the Breezy Point peninsula and Floyd Bennett Field are used as parkland, the need for basic orientation and facilities information will become greater.

VISITOR COMFORT

Because there are no shaded picnic areas at Riis Park, there is indiscriminate picnic activity in landscaped areas featuring ornamental plantings which are not designed for visitor use. The result is destruction of vegetation and overcrowding in those areas.

It is a common perception that people come to the beach to be in the sunshine, and to swim and play in the ocean. While true, it is also an incomplete picture. People using outdoor recreation sites need the simple amenities of shade, water and places to sit comfortably; preferably with a view of some interesting activity or landscape. The heat and humidity of the summer climate at Gateway make the need for such amenities even more critical.

Shade - Because of soil, microclimatic conditions, and the nature of the developed landscape at Riis Park and areas of Fort Tilden, there are very few shaded areas for park users. People, therefore, occupy areas not intended for active use or try to create their own makeshift shading devices. Shade can be used creatively as a magnet to attract people to centers of activity and program sites, or to add colorful highlights to the relatively drab landscape.

Water - In addition to the water provided by the ocean, four needs for potable water were identified.

Barrier-free drinking fountains need to be provided for young children and handicapped persons.

Water spigots are needed so that people can fill containers they carry out to the beach and/or to picnic sites. In an emergency, people would be able to extinguish small fires that have accidently been set.

Water facilities are needed for people who wish to wash off sand and salt before dressing for the trip home. Pull-showers are common fixtures at many ocean beaches and have existed at Riis Park in the past. Such facilities are needed at most beach/boardwalk access points.

Access to water sprays for safe and creative play is needed for park users who choose to picnic relatively far from the shoreline. The ocean is an existing, but potentially dangerous recreation resource, particularly to young children who are not aware of its power.

Seating - The need for seating varies with the associated activity and the place where it is provided. Presently, there are no picnic tables provided for picnicking at Riis Park. Many areas of the boardwalk are without seating of any sort.

Picnic tables with attached seating are needed throughout the park, but primarily in areas where groups of four or more people congregate. Some tables should be moveable so that people can control their arrangement and location according to the group size and personal preference. An experiment conducted at Riis Park in 1978 showed that tables left unattached would be moved about regularly but were never removed from the general picnicking area.

Benches are needed in areas where viewing (recreational activities or scenery) is the primary activity. At Riis Park, sections of the boardwalk are unused because seating is not available. Some benches could be fixed in place where the orientation is typically in one direction, particularly for sports and recreation. Benches should have backs in areas where people are likely to sit for any length of time.

Tables and chairs are needed to provide the kind of seating flexibility required in areas where food is served to individuals and small groups. Loose chairs and tables would make it easier to conduct programmed activities without elaborate preparations. Shade can easily be provided by table umbrellas that would add a splash of color for easy site identification.

RECREATIONAL SPORTS FACILITIES

Recreational sports, including handball, paddleball, basketball, softball, golf, shuffleboard, and paddle tennis, have always been popular at Jacob

Riis Park. Fluctuations in levels of participation in a particular sport can probably be attributed primarily to the condition of the facilities while other more subtle factors such as current popularity (e.g., paddleball vs. handball) or the availability of equipment (shuffleboard) also have an effect. Some of the sports attract spectators as well as players, particularly handball and paddleball. Softball and basketball also attract spectators when a particularly good game is being played. Provisions for spectators at any of the field or court areas or along the boardwalk are very limited, and spectators sometimes interfere with the game.

Most of the court areas (particularly basketball) are in need of repair. The importance of providing and maintaining top quality facilities goes beyond the effect on the quality of play possible, but perhaps more significantly it silently conveys the message that the National Park Service respects the park user's choice of recreational activity and cares about the quality of their experience at the park. Some staff reassignment to provide more supervision of recreation activities and facilities would assure better care for those facilities.

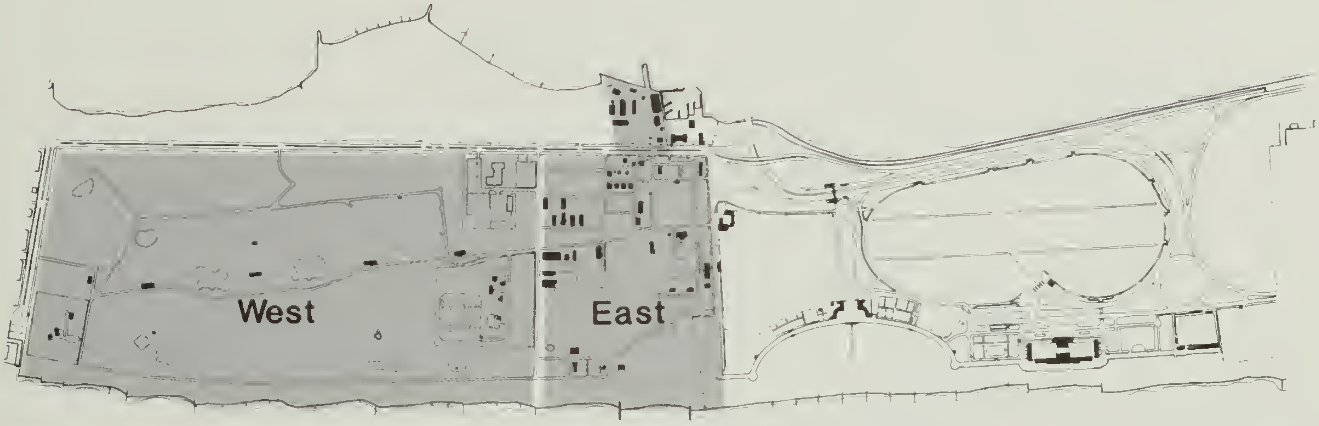
CHILDREN'S ENVIRONMENTS AND ACTIVITIES

Families with young children constitute a significant portion of the visitor population at Riis Park. These families tend to spend the entire day in the park, setting up a "home base" in a shaded area if they can find one. Safe play areas close to these sites make it easier for parents to supervise their children's play. Two areas of Riis Park are designated as playgrounds, and each includes some play equipment such as swings and climbing apparatus. As it is, these playgrounds are of very little use to children. They provide only the most limited resources for creative and enjoyable play activity. The value of these areas is questionable on several grounds; they lack play opportunities other than physical, they include dangerous moving equipment such as swings and teeter-totters, they have dangerous hard paved surfaces, and they lack paced alternatives for children at different development levels. Loose parts such as props, tools, and costumes, that children might use as they see fit, cannot be provided without supervision. The recent emphasis by child psychologists on the importance of play in children's social, physical and intellectual development suggests that we should provide more creative and adventure play areas to supplement traditional physical play.

Young children seldom play without the supervision of a parent or older sibling. It is important to ensure that places where small children play can be easily monitored visually and that comfortable seating for supervising adults is considered. Comfortable seating (benches should be carefully selected for comfort and should have backs and arm rests) and a choice of sunny or shaded locations will likely extend the length of time the adult will spend in the play area; a benefit to both parent and child. Some seating should always be provided near the outside edges of the play area to allow passerbys to watch the children play.

FORT TILDEN/EAST AND WEST

The area of Gateway NRA known as Fort Tilden is clearly divisible into two district landscapes--roughly divided by Hero Road.



Fort Tilden/West

Resource management in this area of the park faces the challenge of blending preservation of historic man-made features with the ongoing forces of nature and the ever changing dune environment.

Almost 75 percent of the land base within Fort Tilden can be described as natural environment, even though much of the topography was artificially created by the construction of concrete bunkers by the U.S. Army Coastal Defense Command. The major portion of this area - Fort Tilden/West - was listed on the National Register of Historic Places as an historic district on April 20, 1984. The western section of Fort Tilden was listed to demonstrate the technological developments in military history during the first half of the twentieth century and as an evocation, along with Fort Hancock, of the "gateways" that protected New York Harbor from attack by sea. The architectural remains of those facilities that were essential elements in the coastal defense system for the New York Metropolitan Area have been subject to the ravages of time, weather, and non-use.

The bunkers have been covered by sand and vegetation, creating a coastal barrier dune environment that is a mixture of sand dunes and sand covered bunkers, with native dune succession vegetation interspersed with introduced plant species. This environment provides valuable habitat for animals and is particularly attractive to migrating raptors, upland bird species and small mammals.

Fort Tilden/East

Fort Tilden does not have the capacity to handle the intensive use patterns of adjacent Riis Park. Access has to be controlled to protect the historic and natural resources, and to provide experiences here that complement, but do not compete with the intensive activity at Riis Park.

Only a semblance of the structures present during its occupation by the military remain in the eastern section of Fort Tilden. Although it may have been typical of a military installation, the Fort Tilden Post was never distinguished by any significant architectural element or major historic event. The buildings that remain have been retained for their potential usefulness; not because of their significance. However, there are good reasons to retain the orderly landscape character of a military post here. The sense of place created by the tree-lined parade ground and the attractive simplicity of utilitarian architecture provide elements to build on as Fort Tilden/East continues to evolve as a recreation site.

MANAGEMENT OBJECTIVES

MANAGEMENT OBJECTIVES

RIIS PARK HISTORIC RESOURCE PRESERVATION

- To halt the physical deterioration of historic resources at Riis Park.
- To retain the character of Riis Park structures, landscape design features, and recreational facilities from the Robert Moses era of park development.
- To rehabilitate Jacob Riis Park as a major recreational use facility through a public/private partnership.

RIIS PARK ACCESS AND CIRCULATION

- To simplify the process of unloading picnic and recreation equipment and moving from one's car into the park.
- To improve public safety by eliminating pedestrian/vehicle conflicts wherever possible.
- To provide information at bus stops to orient arriving visitors and to post bus schedules to facilitate their return trip.
- To make bus waiting areas more comfortable.
- To designate and mark paths and roads intended for bicycle use.

PARK INFORMATION

- To offer wayfinding, activity, and interpretive information to park users.
- To ensure consistency in the park information system--colors, typefaces, placement, symbols, etc.

VISITOR COMFORT

- To provide more shade, water, and a variety of seating places throughout Riis Park and at selected active use areas of Fort Tilden.

RECREATIONAL FACILITIES

- To continue the tradition of recreational sports activities at Riis Park and to provide safe facilities for competitive games.

- To create better places to watch sports activities throughout Riis Park.
- To provide facilities to allow a variety of performing arts programs at Riis Park.
- To reestablish Jacob Riis Park as a major recreational facility.

CHILDREN'S ENVIRONMENTS AND ACTIVITIES

- To provide a rich variety of play experiences that include opportunities for various forms of physical, social, and cognitive play.
- To staff selected play areas with adult play leaders who can provide supervision and supply materials for creative play.
- To allow a smooth flow of activity between areas for families and for children; with unobstructed visual contact between these areas.
- To create pleasant microclimates for children and adults by providing areas protected from the wind that have a mixture of sun and shade.
- To provide loose parts that the child can manipulate to shape a personal environment necessary for cognitive development.
- To include water play as a separate area capable of being linked to nearby sand play areas.

FORT TILDEN'S HISTORIC AND NATURAL RESOURCES

- To retain the elements of Fort Tilden's historic role in the defense of the New York Metropolitan Area, and to communicate that history to the public.
- To allow natural succession to continue in the wildland areas of Fort Tilden.
- To retain the landscape character of a military post in the eastern area of Fort Tilden.

ALTERNATIVES . . . INCLUDING THE PROPOSAL

THE PROPOSAL

Fort Tilden

The primary differences between this proposal and the 1979 GMP are the methods of access to the area and its design capacity. The shuttle bus system and ferry boat service proposed in the GMP to serve Fort Tilden, West Beach, and Tip Beach are not included within the scope of this DCP; however, if these services were added in the future, they would be compatible with the proposal. The shuttle was proposed to facilitate recreational beach use when all areas on the Breezy Point Tip are fully developed. Fort Tilden alone cannot support the large number of visitors it would take to justify and successfully operate such a system. The shuttle would only be instituted when West Beach and Tip Beach were developed, which is not expected to occur during the next 5 to 10 years.

Fort Tilden would provide an alternative to the kind of experience available to Riis Park. The fort area is not seen as a relief valve for the large number of visitors that descend on Riis on peak days in the summer. Instead, through a reservation and permit system, the volume of use at Fort Tilden would be managed to be compatible with the capacity of the facilities and the durability of the resources. Many activities would be programmed and educational. Informal and active recreation would be permitted in designated areas, and limited parking would be provided in each use area (300 total spaces), but fields and sites would have to be reserved ahead of time. The beach center proposed in the GMP would be eliminated. It would not include food concessions or changing spaces, however, restrooms, outside showers, and sheltered seating would be provided in the same location to accommodate organized groups through a reservation system.

The special facility for the handicapped proposed in the GMP is not recommended at this time. Instead, an adventure playground accessible to children of all ability levels would be established and staffed by at least one adult play leader (supplemented with volunteers). Barrier-free access to the beach would be provided.

The youth hostel recommended in the 1979 plan is included in this proposal. Existing barracks or new overnight facilities in the form of a cabin camp would serve organized groups staying overnight. This cabin camp would be constructed through private donations. Supervised group camping is proposed in the DCP but in a different location from the 1979 GMP. Instead of the location near the Battery Harris bunkers, the current proposed site is closer to the Gateway Consortium and NPS workshop buildings. This site is less sensitive to camping impacts and is near a variety of use areas--natural, recreational, and educational, as well as restrooms and utilities.

The treatment of Shore Road and fishermen access would differ from the GMP. Shore Road would be closed to all vehicles under the new proposal to allow the primary dune to grow northward. Fishermen would then be able to park at the western end of Shore Road but not along the road.

The intent of this change is to prevent dune erosion and to allow sand to accrete over the roadway and beyond, limiting the number of places that the primary dunes are crossed by visitors.

The estimated cost of proposed capital improvement at Fort Tilden amounts to approximately $700,000. The cost of the cabin camp is not included in this figure since it would be constructed through private funds.

Riis Park

The 1979 GMP did not include a complete DCP for Riis Park, but it did state that the location and configuration of existing facilities at Riis Park would be retained. This new proposal differs from the 1979 plan in that it involves the reallocation of space for different uses in some areas and rearrangement of facilities in other areas. The overall concept is one of park renewal; a blending of the ambience of historic features with the liveliness of new activity.

This proposal is based on the creation of a public/private partnership, which will undertake the enhancement of the visitor experience for Riis Park users, and the rehabilitation of the park's historic resources. All of the actions in this proposal fall within the recreation management zones of the General Management Plan. No actions are proposed within the protection management zones.

The private partner (the concessioner) will rehabilitate the Riis Park Bathhouse (to Department of the Interior standards) to house existing park administrative and operational functions, as well as new public use facilities. Those new uses will include a restaurant and catering facility on the second floor of the beach pavilion and development of the interior court area as a public garden and pool complex. The first floor of the beach pavilion will house remodeled food services and beach equipment rental concessions. The entrance pavilion will include park interpretive exhibits in the lobby and will provide locker rental and shower facilities to park users.

The east and west wings of the bathhouse will be rehabilitated to contain the various administrative support activities currently located in those buildings including: the lifeguard center, park and city police substations, a first-aid station, and public restrooms.

This proposal introduces a new recreational activity element that will include an aquatic theme park with a design capacity of 7,500, with waterslides and other active water recreation features, an amphitheater for performing arts (15,000 seating capacity), a miniature golf course, children's playground, and developed picnic sites. A bicycle rental facility will be provided near the 169th Street end of the boardwalk to serve bicycle trails in Fort Tilden. Bicycle riding will still be prohibited in Riis Park except on designated bike paths. Park court game areas (basketball and handball) will be refurbished or replaced, and will continue to be free of charge.

The park's historic ships rail and lighting fixtures will be rehabilitated to reflect their historic quality. Landscaped areas will be replanted where necessary and new trees will be planted throughout the park to provide more shaded areas. Other improvements designed to improve visitor comfort will include additional seating (benches and tables with chairs) in some areas, new beach showers at beach access points, and a shade pavilion and information kiosk at the bus debarkation point.

Some of the new recreation developments will change the use and character of areas within the historic district. The par 3 golf course will be relocated to the open space area north of the Neponsit Hospital and will be replaced by the aquatic park, miniature golf course, and performing arts center. The existing lighted softball field will be moved to Fort Tilden to make room for family picnicking and a new children's playground.

These actions are intended to provide park visitors with better facilities and a greater variety of recreation activities to participate in, without eliminating any traditional uses or user groups. Some change to the historic setting will occur as a result.

The addition of new activities at Riis Park will increase visitation with a resultant increase in traffic. The development partnership will provide access to Riis Park by express charter bus and ferry service from Manhattan and other city points. This will require development of a docking facility on Jamaica Bay directly north of the Riis Park mall. A shuttle bus system between a new car parking facility on existing runways at Floyd Bennett Field and Riis Park would mitigate the effects of additional traffic. Details of the traffic plan are included in Appendix B.

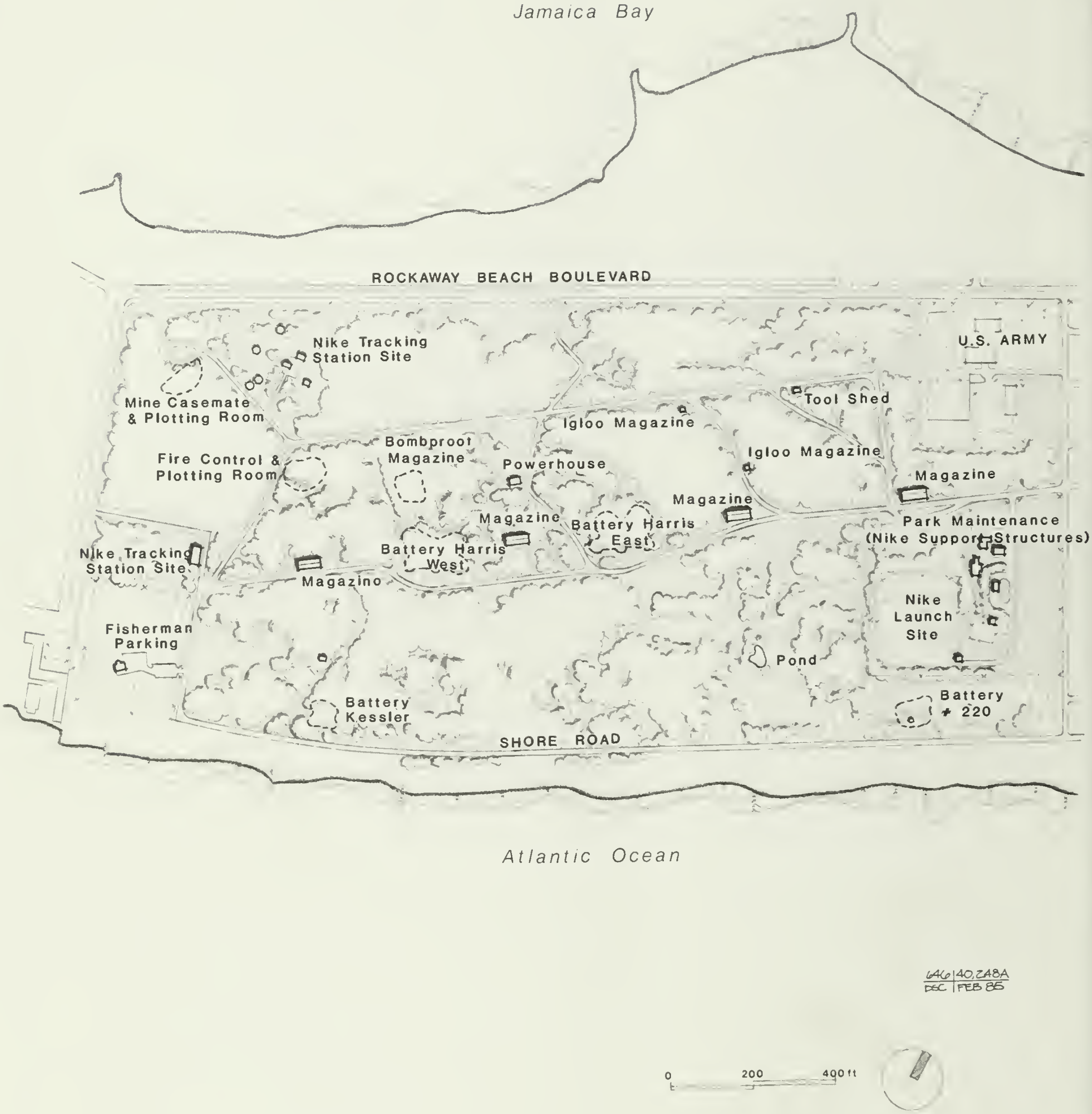
The concessioner will rehabilitate the historic bathhouse and refurbish the park's landscape and sports facilities at an estimated cost of $15 million. Further, the concessioner will engage in subcontracts with selected operators for the development of the aquatic theme park, performing arts center and food services. These development costs are estimated to be in excess of $40 million. The total investment is estimated to be in excess of $55 million.

Item	1989	1990 and beyond
Contract Management	$ 362,000	$ 232,000
Facility Improvements	1,010,000	410,000
Operations		
Operations	296,000	266,000
Maintenance	364,700	364,700
Park Police	989,000	691,000
Total	$3,021,700	$1,963,700

These estimates of cost to the National Park Service are preliminary and may change as the result of negotiations with the concessioner, particularly in the area of facility improvements and maintenance.

The proposed concessions/historic leasing contract would not exceed a term of 30 years. The concessioner will finance the capital improvements at Riis Park, operate and maintain the revenue producing facilities; and, in fees paid to the National Park Service, contribute to the overall repair and maintenance of the park.

Implementation of the rehabilitation and development program will be undertaken as one continuous project expected to take about 18 months to complete.



646 | 40,248A
DSC | FEB 85

Fort Tilden . . . west

Existing Conditions

United States Department of the Interior
National Park Service

Development and Use Concept

With the objectives of preservation of the natural and cultural environment, this area will continue to be lightly used for environmental education, nature study, and other low-impact uses. Representing one of the largest beach and backdune ecosystems remaining in New York City, it contains no single outstanding natural feature, yet its mixed vegetation provides important habitat for birds, insects, and small mammals. Unnecessary roadways will be scarified, unsafe structures demolished, and a coherent vehicular, pedestrian, and bike trail system will be developed.

Specific Development and Rehabilitation Actions:

1 Conduct a structural study of all National Register properties to determine stabilization or restoration requirements (see appendix).

2 Identify all physically hazardous conditions and correct or remove structures and restore sites to a natural condition, then remove all interior fences not required for public safety.

3 Provide controlled vehicle access to the western end of the Fort Tilden beach and expand parking to 35 cars. Establish restrooms near the parking area, and provide shaded shelter nearby.

4 Create a system of foot trails connecting special features and habitats between the beach and the proposed vehicle access road. Surface the trails with woodchips and provide boardwalks at beach access points to protect the foredunes.

5 Establish an area for supervised group camping (20-120 campers).

6 Conduct the following stabilization/restoration work if found to be feasible as a result of proposed structural study.
Stabilize
- Mine casement & plotting room
- Fire control & plotting room
- Bombproof magazine
- Power plant building
- Battery Kessler
- Battery 220
- Igloo magazines
- Magazines 401, 405, 414

7 Adapt for interpretation
- Battery Harris Bunkers
- Command post bunker
- Nike launch site (one silo)

8 Remove unsafe structures
- Nike launch support buildings
- Nike tracking station (south)

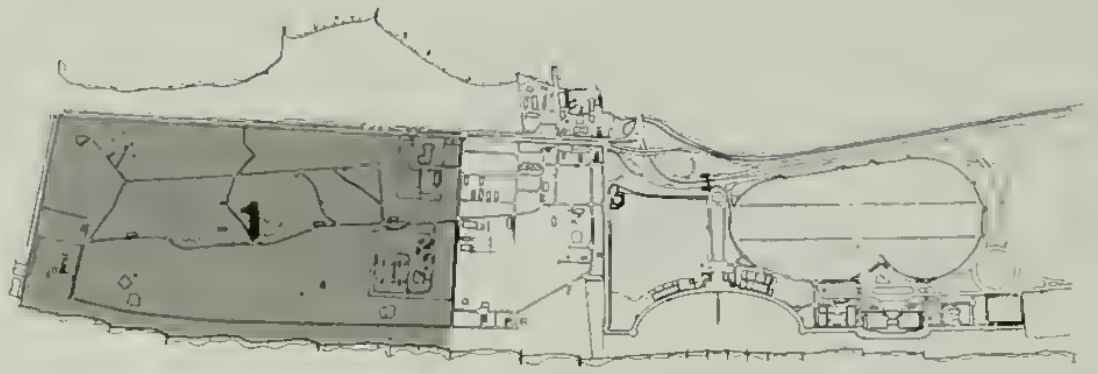
9 Restore
- Magazine 409

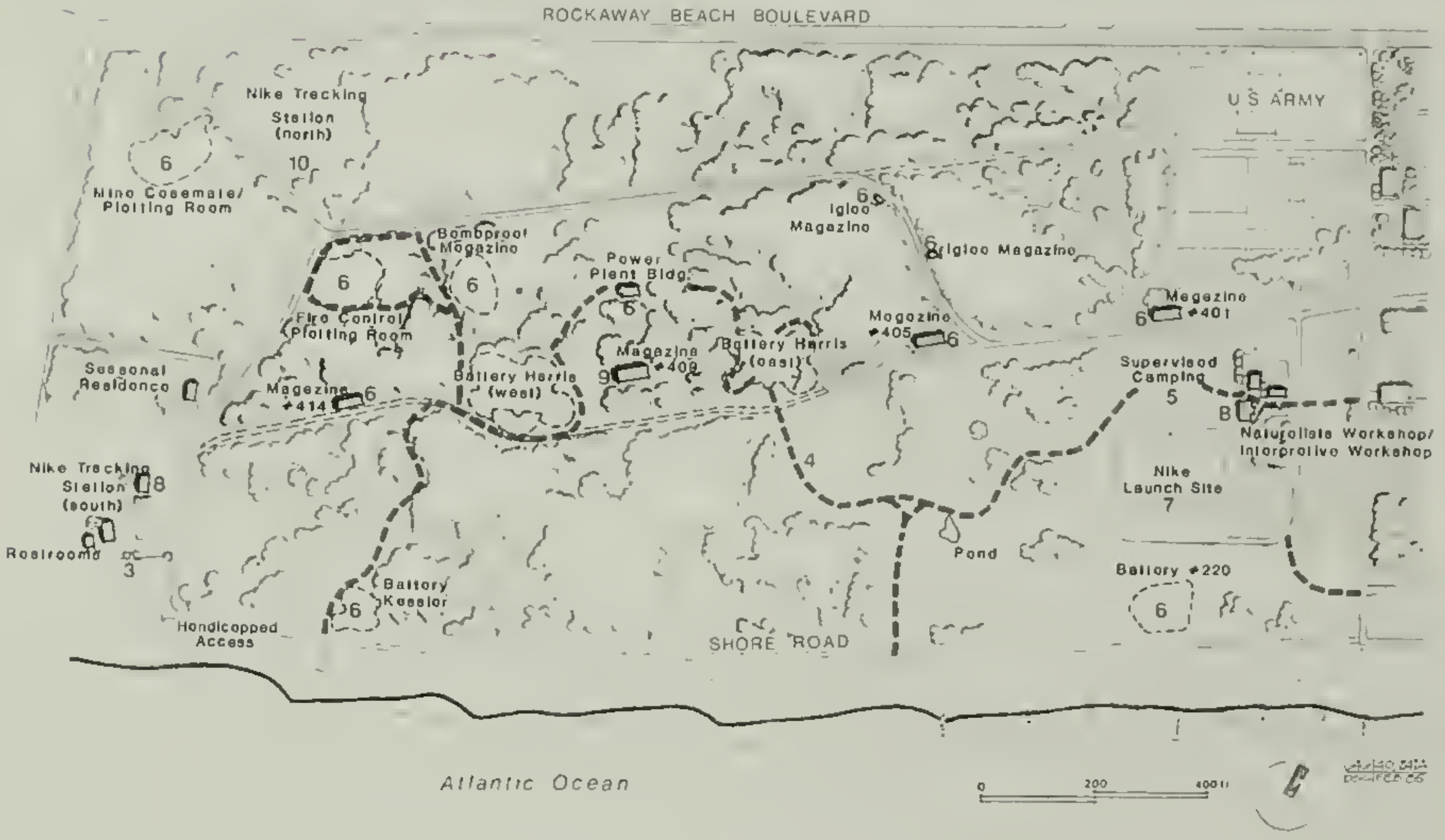
10 Remove unsafe structures
- Nike tracking station structures (north)

Survey and replant sites:
- Archeological Site (BP30)
- Archeological Site (BP4B)

Development and Maintenance Costs — The National Park Service will make the necessary investments to accomplish these actions, and be responsible for maintenance.

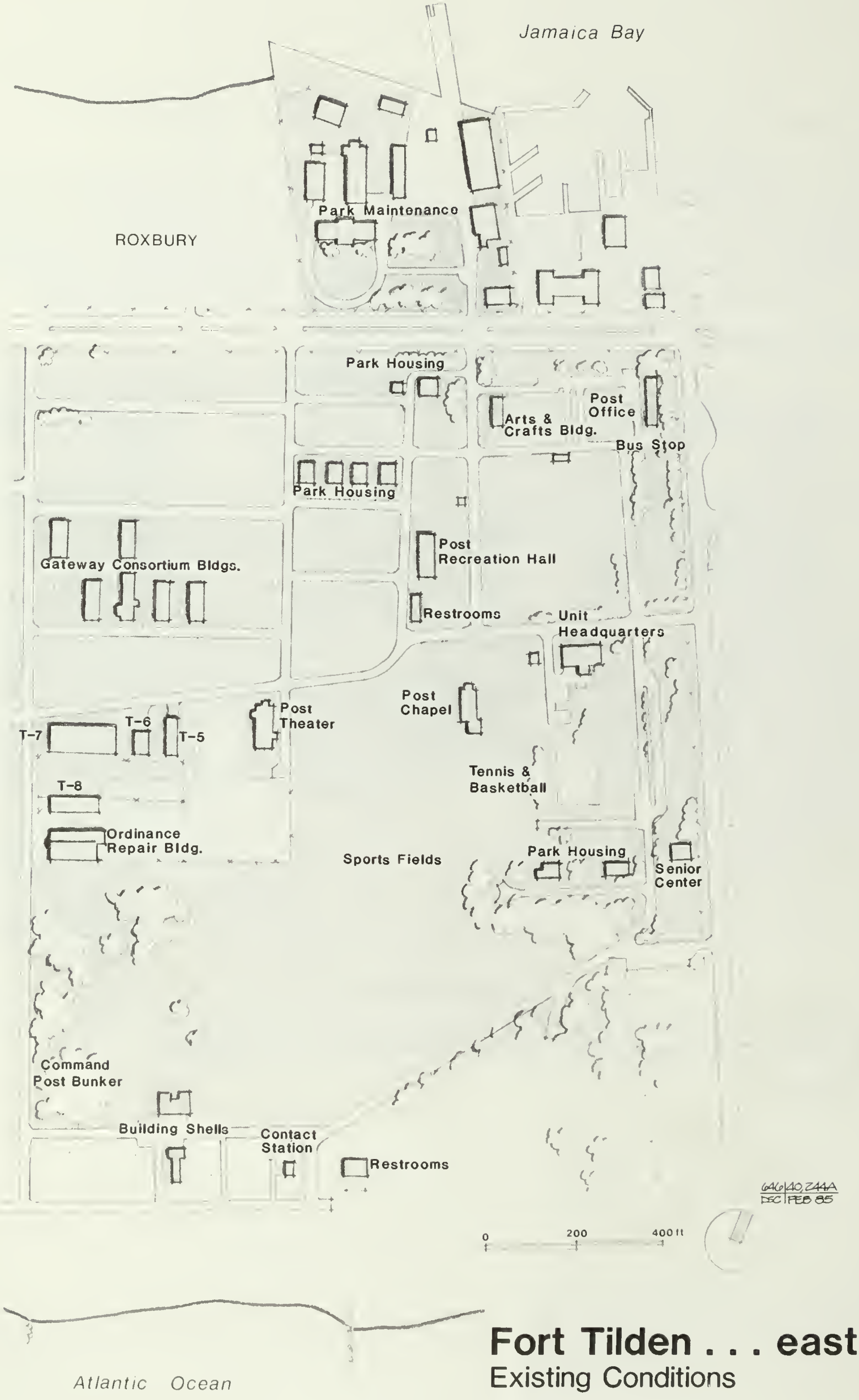
1 Fort Tilden . . . west





New Trail
Road to be Closed

Fort Tilden . . . west
Proposal
United States Department of the Interior
National Park Service



Fort Tilden . . . east

Existing Conditions

United States Department of the Interior
National Park Service

2 Fort Tilden . . . east

Development and Use Concept

This area will continue to be used on a use-by-reservation basis. The campus-like atmosphere will contrast dramatically with the urban hub-bub of Riis Park. Generally, entering visitors will know their destination in Fort Tilden, because a member of the group will have a use permit for one of Tilden's special facilities. Limited parking and controlled access will allow for expanded recreational and educational use without increases in auto traffic. Existing structures will be rehabilitated. New restrooms will be provided near use areas. Cabins to be used for children's residential educational programs are proposed for the consortium area.

Specific Development and Rehabilitation Actions:

11 Establish sportsfields in this location.

12 Plant trees and shrubs that are tolerant of local conditions to define use areas and to provide shade and shelter from the wind.

13 Relocate all maintenance facilities to the north side of Rockaway Beach Blvd. Designate the area adjacent to the Coast Guard facility as a future ferry and shuttle bus terminal.

14 Plant a screen of evergreen trees and shrubs between the maintenance area and Roxbury.

15 Establish criteria and a system for selecting uses (and users) for vacant buildings. Prepare policies for use (e.g. cost-sharing for repairs, utilities, etc.).

16 Install signs along roads and paths designated as bicycle routes through the park.

17 Close unnecessary roads and establish a network of walks and foot paths to join all visitor use areas.

18 Establish several small parking areas to serve specific facilities.

19 Limit auto access to one entry/exit point.

20 Construct new restrooms and outside showers to serve park users participating in activities and programs on the beach and at other nearby areas of Fort Tilden.

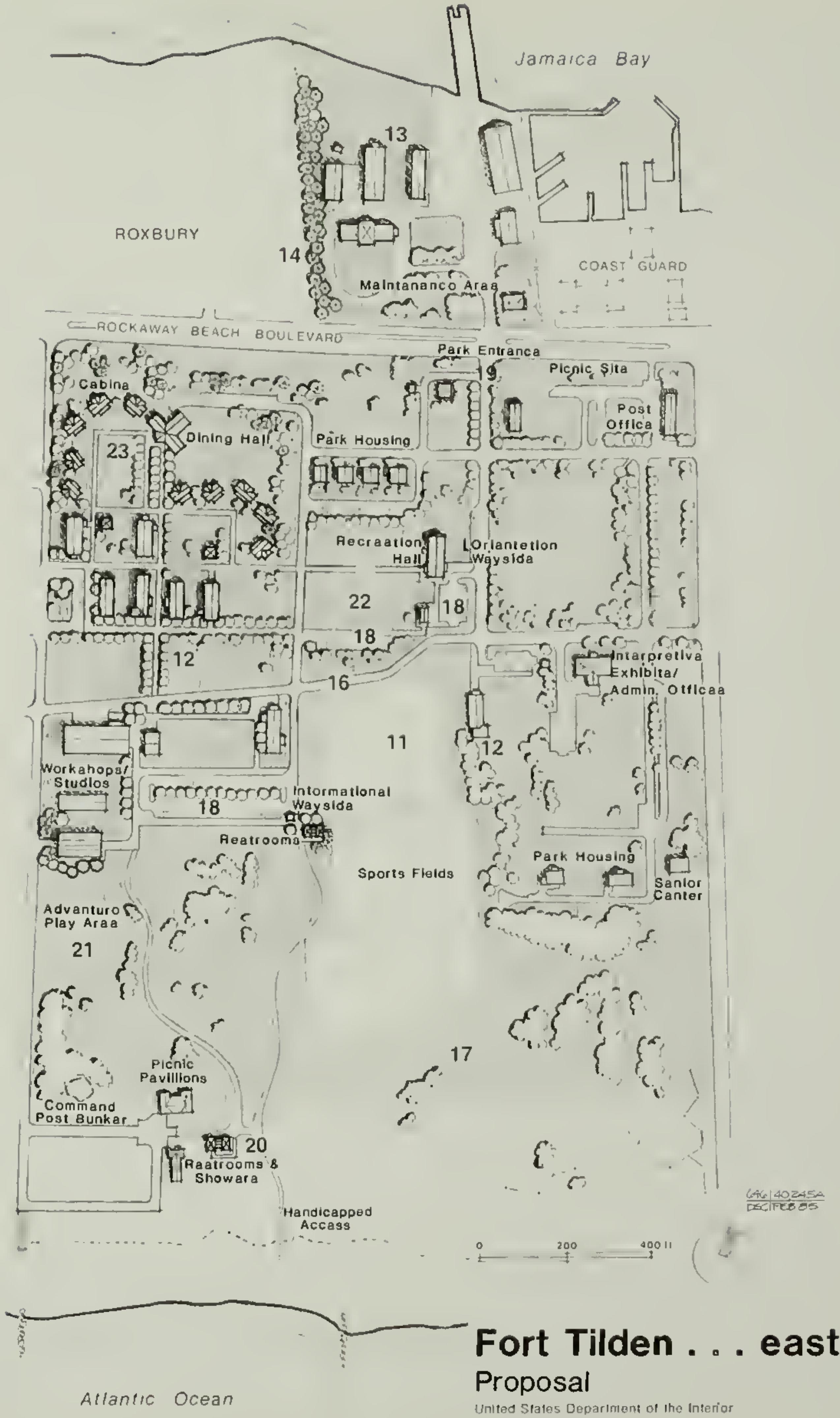
21 Create an adventure playground accessible to children of all ability levels and staff it with a qualified adult play leader and volunteers.

22 Retain community gardens.

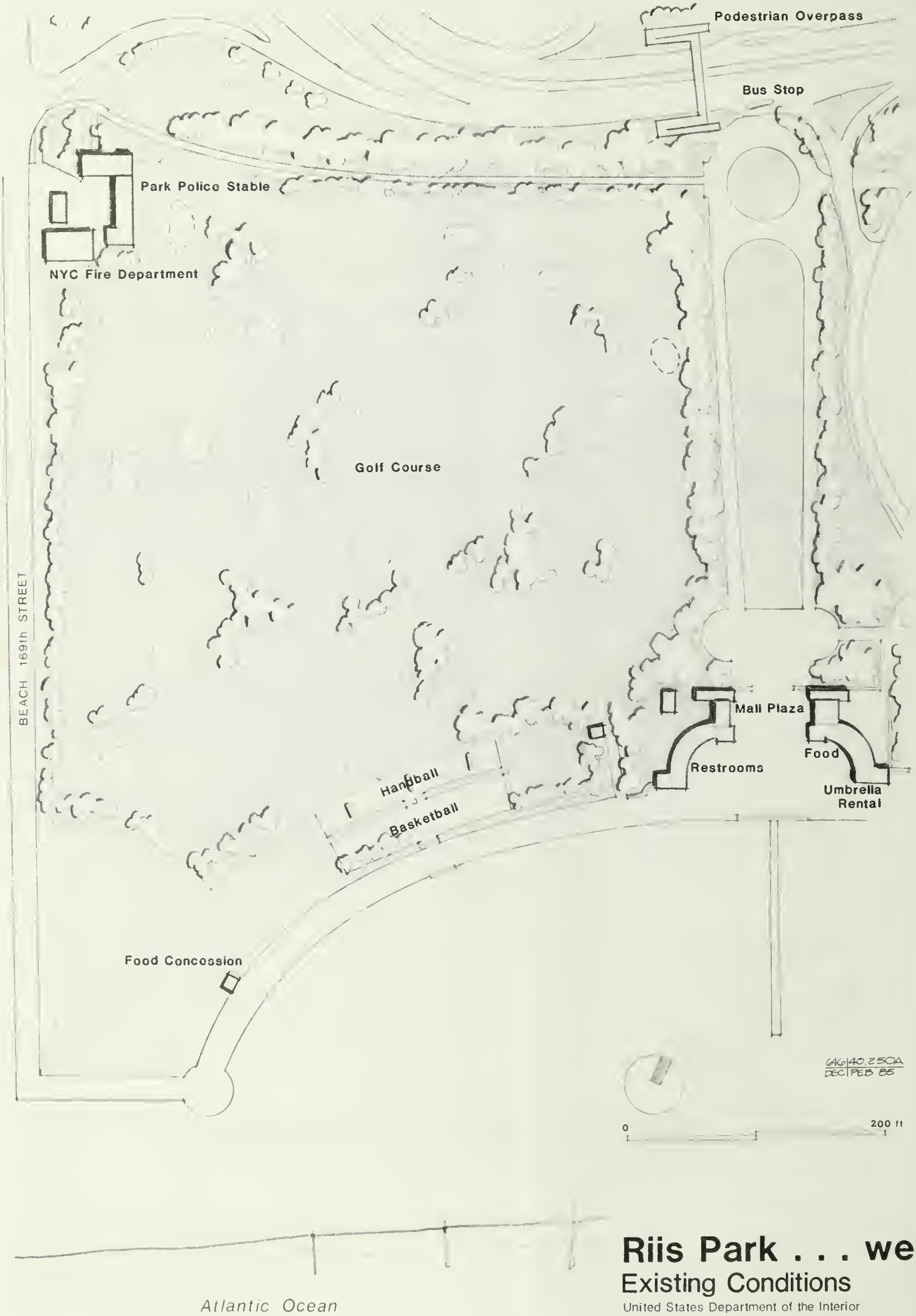
23 Permit the consortium to build cabins and a dining hall for youngsters that attend their programs (8 campers and 1 or 2 counselors per cabin).

— Construct new Park Police stables (location to be determined).

Development and Maintenance Costs — The National Park Service will make the necessary investments to accomplish these actions, and be responsible for maintenance.



Fort Tilden . . . east
Proposal
United States Department of the Interior
National Park Service



Riis Park . . . west

Existing Conditions

United States Department of the Interior
National Park Service

3 Riis Park . . . west

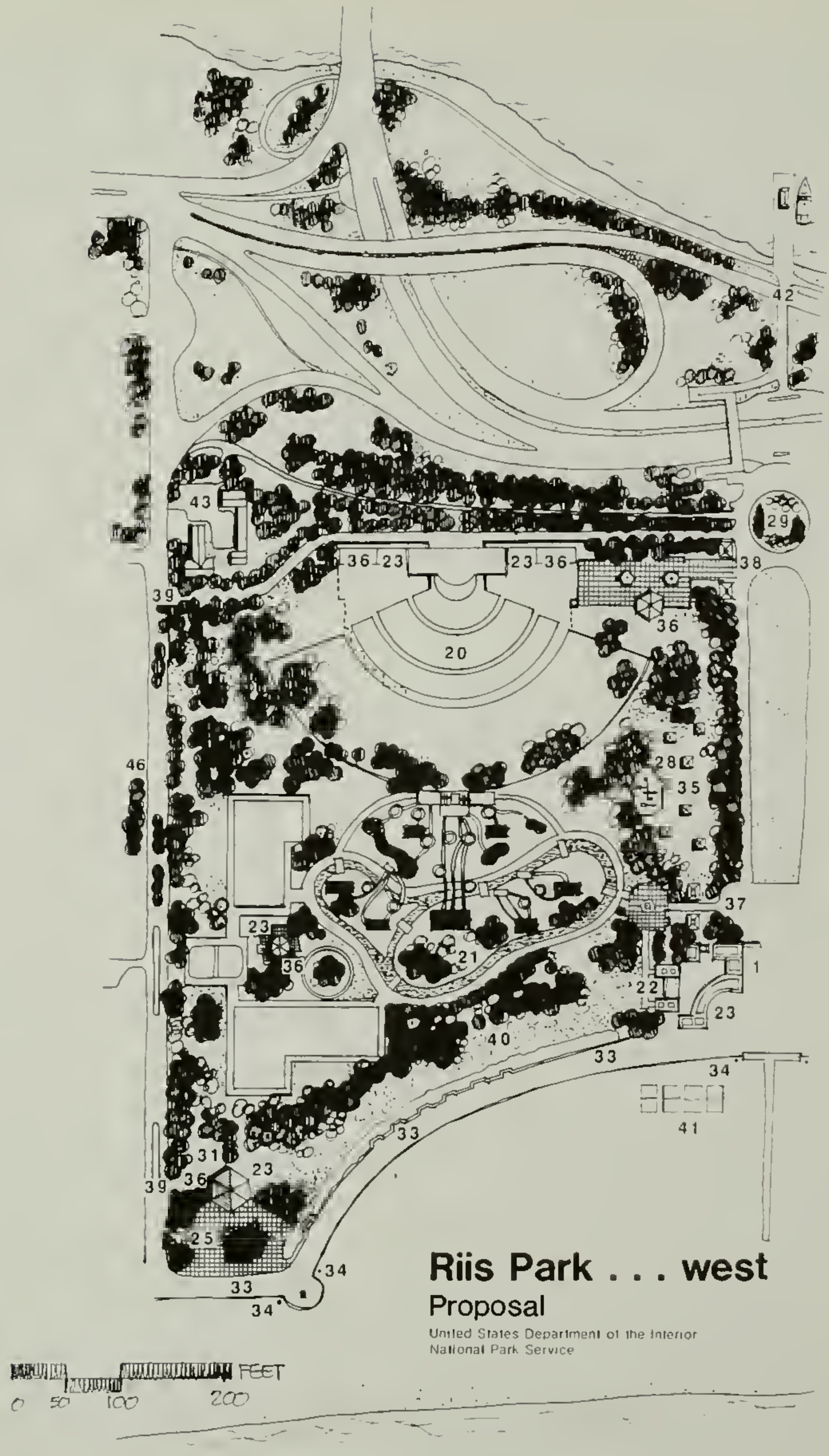
Development and Use Concept

Significant changes will occur in this area, including the development of major new recreation and performing arts facilities. The historic Mall Plaza buildings will also be rehabilitated. To make room for the new activities the par 3 golf course will be relocated to the site east of the parking lot. A landscaped strip will be created along 169th Street. Throughout the site trees and shrubs tolerant of local conditions will be planted to provide shade and shelter from the wind. The stables will be converted to the concessioner's maintenance facility and the Park Police unit will be moved to new stables at Fort Tilden.

Specific Development and Rehabilitation Actions:

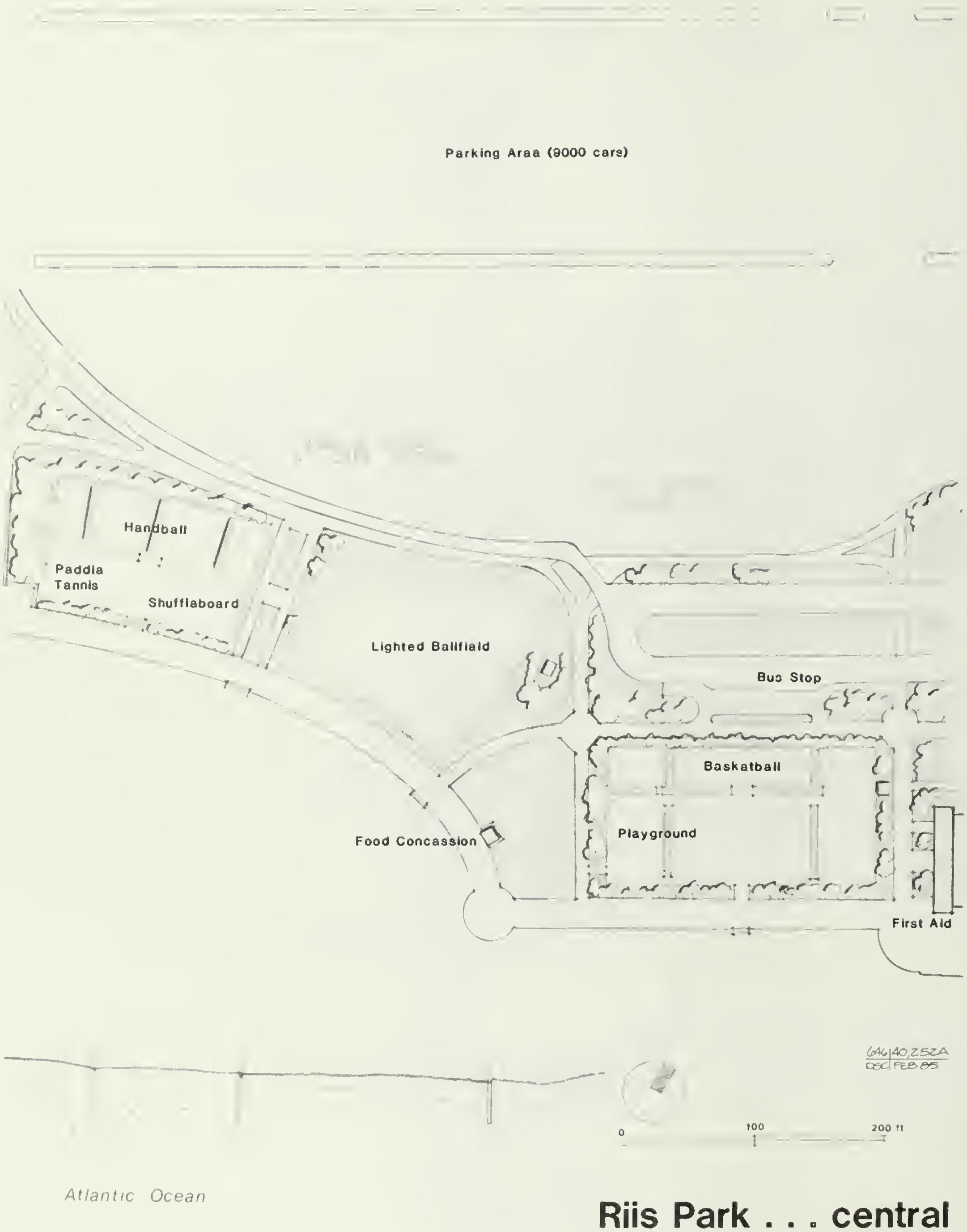
1	Interpretation Center
20	Performing Arts Center (15,000 capacity)
21	Waterpark (7,500 capacity)
22	Lockers
23	Restrooms
25	Bicycle Rentals (100 bicycles)
28	Adventure Playground
29	Ornamental Planting
31	Parking Lot
32	Ferry Dock
33	Seating
34	Shower Points
35	Picnic Plaza
36	Food Service
37	Waterpark Entrance
38	Amphitheater Entrance
39	Service Entrance
40	Miniature Golf
41	Volleyball
42	Pedestrian Crossing
43	Maintenance Buildings
46	Landscaped 169th Street

Development and Maintenance Costs — The concessioner will make the necessary investments to accomplish these actions. A portion of the income from fee activities within the park will be used to pay for maintenance.



Riis Park . . . west
Proposal
United States Department of the Interior
National Park Service

646 | 40249B
DSC | MAR 83



Riis Park . . . central

Existing Conditions

United States Department of the Interior
National Park Service

4 Riis Park . . . central

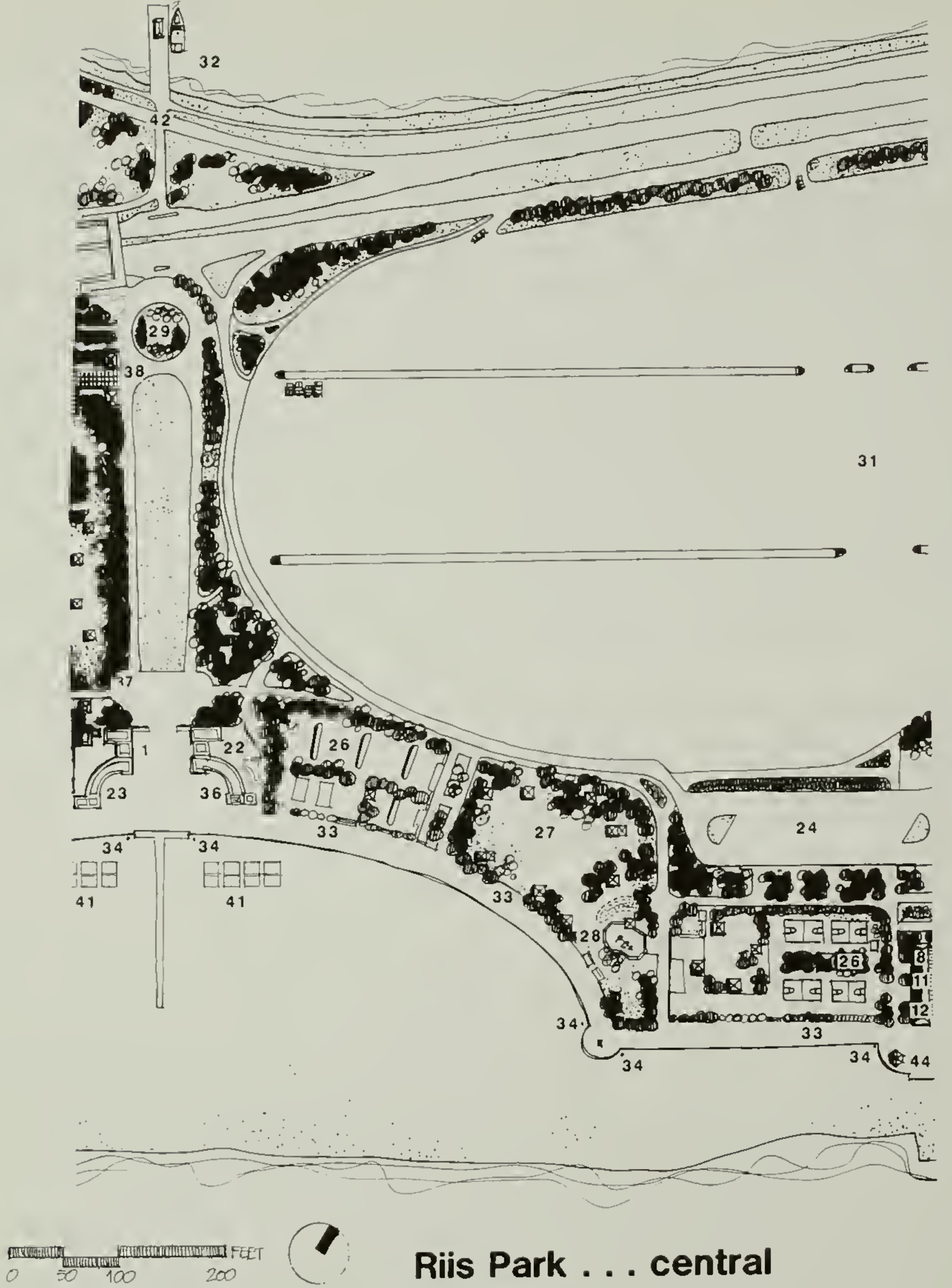
Development and Use Concept

Activity areas will be reorganized to provide more space for popular activities, and to make currently unused areas more attractive and useable. The entire back beach area will be redesigned, opening up more picnic space —always at a premium at Riis Park, and will offer a viable alternative to picnicking under the low branches of the ornamental trees and shrubs that line the walkways. The main bus stop area will be reorganized and shade added. The installation of informational signs at major pedestrian intersections will make it easier to inform park users about available facilities, activities, and events. The central playground will be rearranged to create picnic sites and consolidate basketball courts. A toddler play area will be created with a small climbing structure, sand, water spray, shade, and seating for parents. Spectator seating will be created around the paddleball and paddle-tennis courts (26). More seating (33) will be provided along the boardwalk and near picnic and play areas. A children's play area for 5 to 12 year olds will be established (28) with play equipment, landforms, a water feature, and shade. The ballfield will be relocated to Fort Tilden and the area (27) converted to picnicking and playfield use, including shelters, grills, drinking water, and shade trees.

Specific Development and Rehabilitation Actions:

1	Interpretation Center
8	Restrooms
11	Rangers
12	Lifeguards
22	Lockers
23	Restrooms
24	Shuttle Bus Staging
26	Court Games
27	Picnic Area
28	Adventure Playground
29	Ornamental Planting
31	Parking Lot
32	Ferry Dock
33	Seating
34	Shower Points
36	Food Service
37	Waterpark Entrance
38	Amphitheater Entrance
41	Volleyball
42	Pedestrian Crossing
44	Information Kiosk

Development and Maintenance Costs — The concessioner will make the necessary investments to accomplish these actions. A portion of the income from fee activities within the park will be used to pay for maintenance.

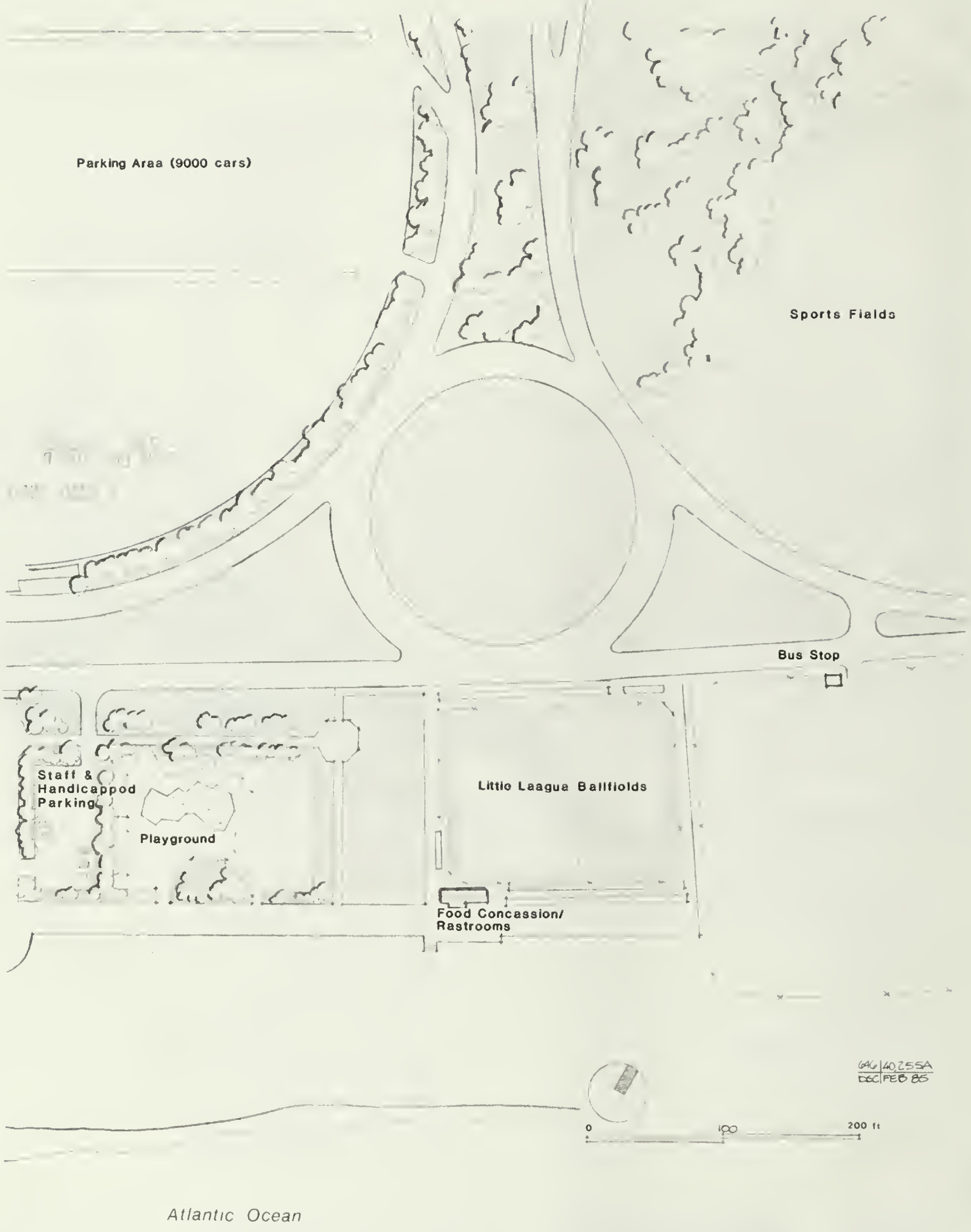


Riis Park . . . central

Proposal

United States Department of the Interior
National Park Service

646 | 40251B
DSC | MAR 88



Riis Park . . . east

Existing Conditions

United States Department of the Interior
National Park Service

5 Riis Park . . . east

Development and Use Concept

The changes proposed in this area are intended to build on what currently exists and to improve the quality of available space. The playground (28) will be enlarged and made more challenging. Modifications will include a water spray, earth mounds, and shaded sand play. Restrooms (23), shelters, and shade trees will be added to make the area an attractive picnic site for families (27). Small modifications to provide alcoves for gathering along the boardwalk and the addition of tables and chairs near the concession stand will make this area more comfortable and suitable to the needs of park users in this area. Outside showers (34) will be installed for washing off sand at beach entry points. Unmanned informational kiosks (44) will be provided near the intersection of major entry walks and the boardwalk. The staff/handicapped parking (31) area will be redesigned to permit emergency vehicle access to the boardwalk. The boardwalk will be extended to the front of the Neponsit Hospital.

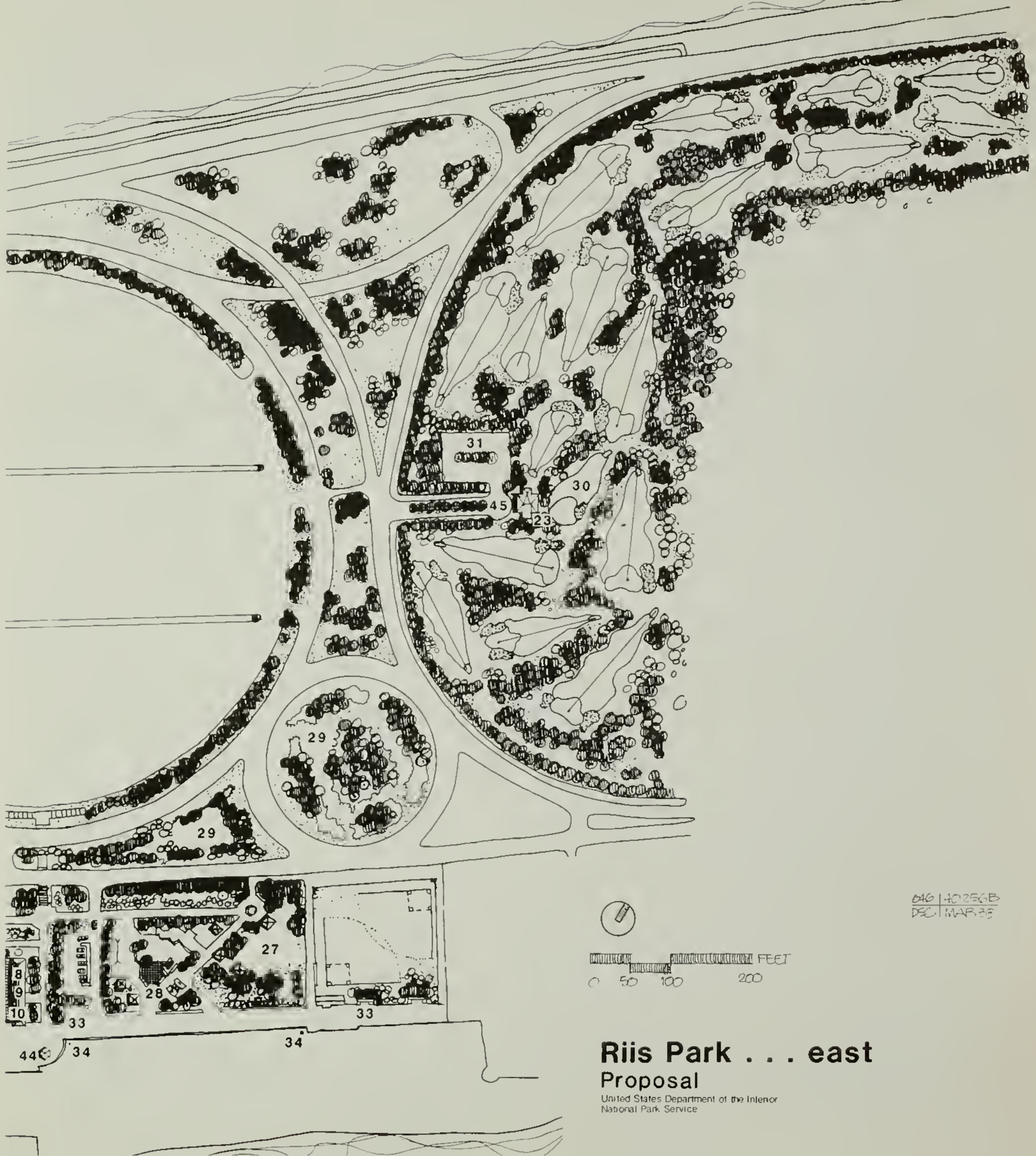
Riis Park's existing par 3 golf course will be replaced by a completely new 18-hole course and clubhouse to be located in the open space east of the parking lot. The ballfields now occupying this space will be accommodated at Fort Tilden.

In the Riis parking lot, the parking bays will be reoriented north-south to make pedestrian movement safer and simpler.

Specific Development and Rehabilitation Actions:

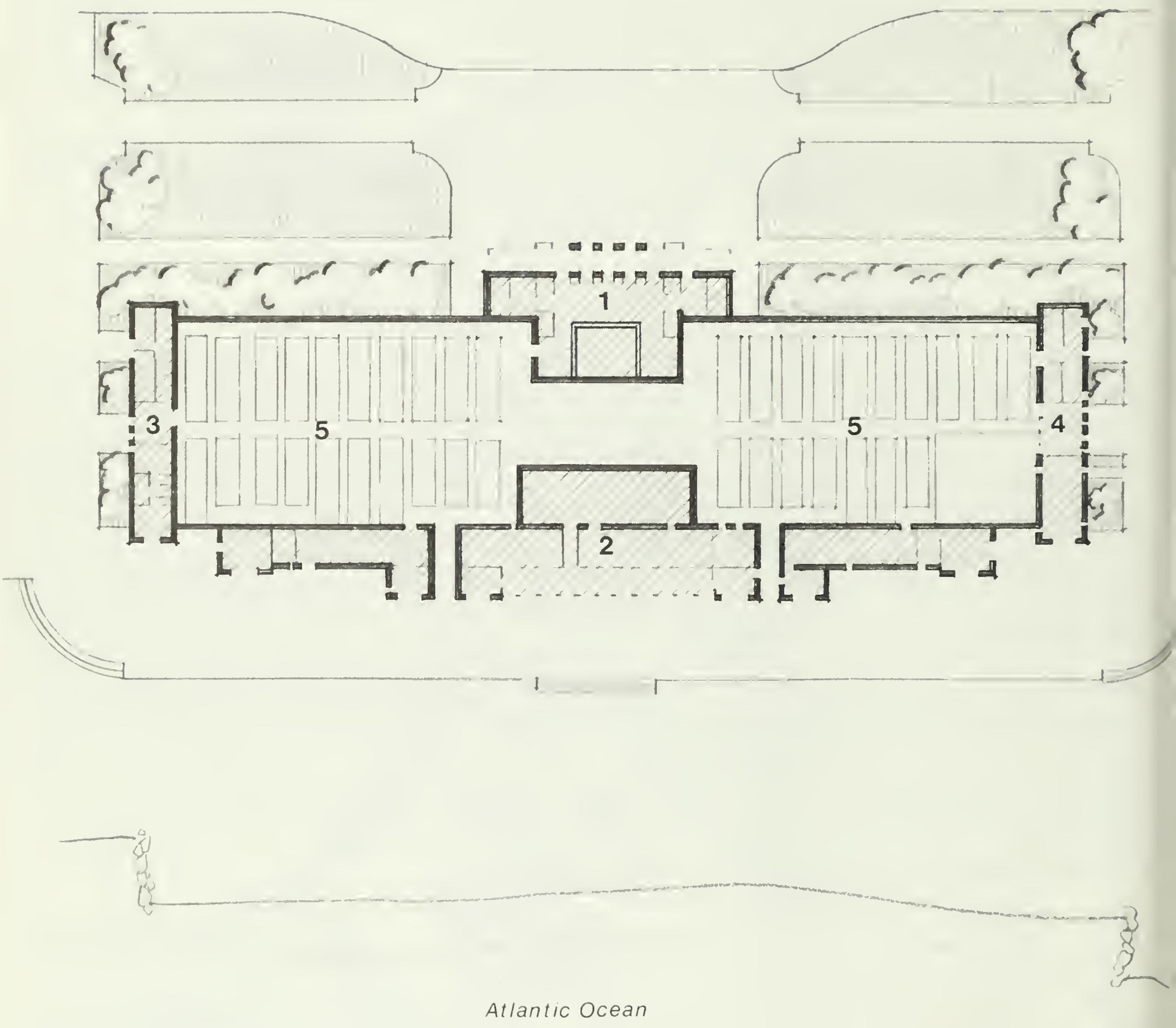
8	Restrooms
9	Police
10	First Aid
23	Restrooms
27	Picnic Area
28	Adventure Playground
29	Ornamental Planting
30	Golf Course
31	Parking Lot
33	Seating
34	Shower Points
44	Information Kiosk
45	Golf Course Tickets/Rentals

Development and Maintenance Costs — The concessioner will make the necessary investment to cover the relocation of the golf course and to make improvements to other public areas throughout the park. A portion of the income from the fee activities will be used to pay for continued maintenance of park improvements.



646 | 40256B
DSC | MAR 85

Riis Park . . . east
Proposal
United States Department of the Interior
National Park Service



Legend

1 Entrance Pavilion
2 Bathing Pavilion
3 West Wing
4 East Wing
5 Courtyard (changing shelters)

646 | 40,286A
DSC | FEB 88

Riis Park . . . Bathhouse
Existing Conditions

United States Department of the Interior
National Park Service

6 Riis Park . . . Bath

Development and Use Concept

The bathhouse will be the centerpiece of t
entire structure will be rehabilitated to hou
and restaurant facilities. In addition, park in
bathhouse.

Specific Development and Rehabilitation Act

Accomplish all architectural, structural, mech
the bathhouse to the secretary of the interio
locations:

BAYSIDE PAVILION

1	Interpretive Center
2	Tickets/Towels
3	Offices

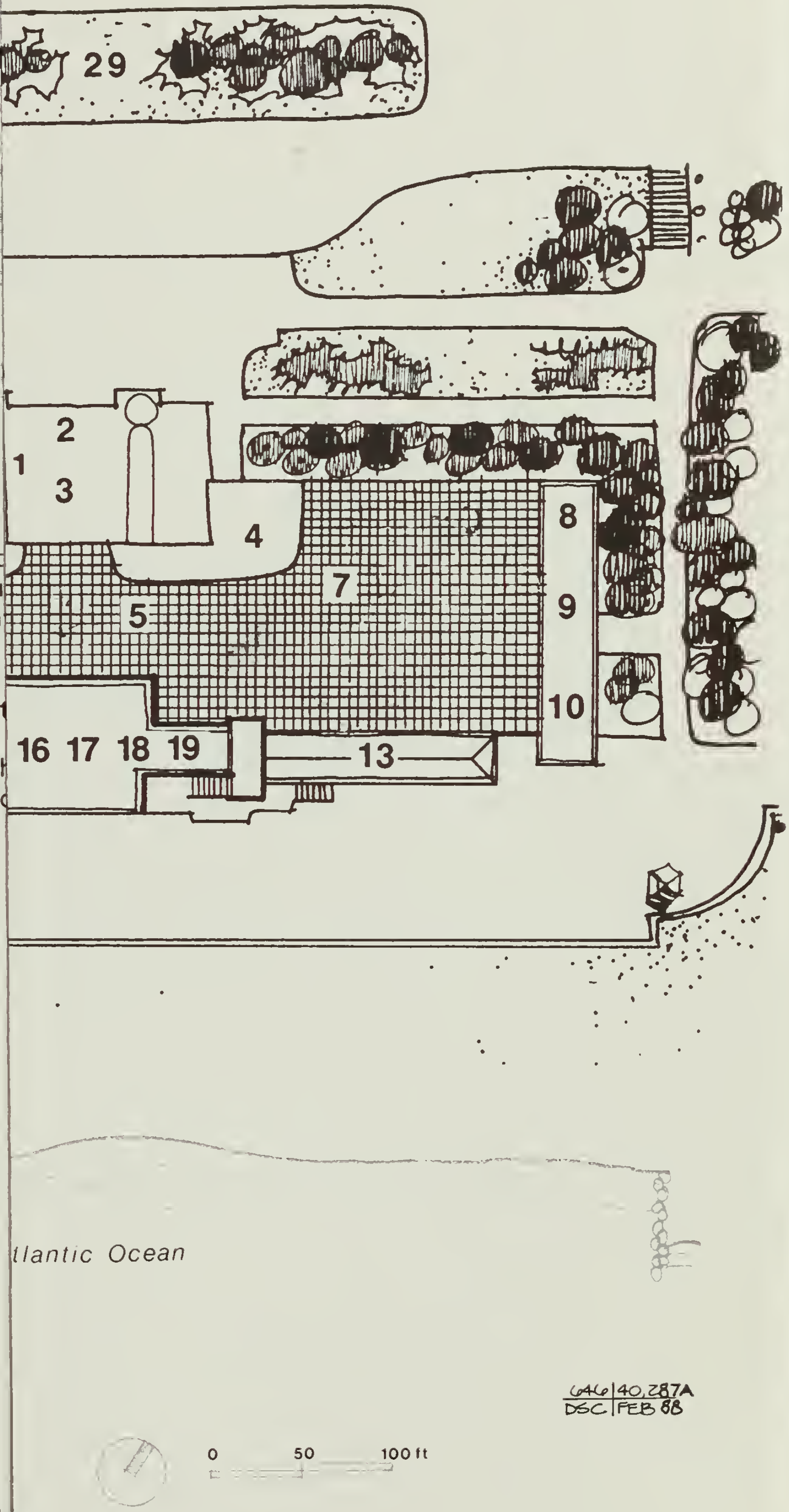
INTERIOR COURTYARDS

4	Lockers/Cabanas
5	Public Garden
6	Swimming Pool
7	Children's Pools

EAST WING

8	Restrooms
9	Police
10	First Aid

Development and Maintenance Costs — Th
rehabilitate the Jacob Riis Bathhouse in acc
by the secretary of the interior. A portion
the costs of maintaining the facilities.



Riis Park . . . Bathhouse
Proposal
United States Department of the Interior
National Park Service

6 Riis Park . . . Bathhouse

Development and Use Concept

The bathhouse will be the centerpiece of the public/private partnership at Jacob Riis Park. The entire structure will be rehabilitated to house both existing support services and new recreational and restaurant facilities. In addition, park interpretive exhibits will be displayed within the restored bathhouse.

Specific Development and Rehabilitation Actions:

Accomplish all architectural, structural, mechanical, and electrical improvements required to restore the bathhouse to the secretary of the interior's standards. Specific uses will occur in the following locations:

BAYSIDE PAVILION

1 Interpretive Center
2 Tickets/Towels
3 Offices

INTERIOR COURTYARDS

4 Lockers/Cabanas
5 Public Garden
6 Swimming Pool
7 Children's Pools

EAST WING

8 Restrooms
9 Police
10 First Aid

WEST WING

8 Restrooms
11 Rangers
12 Lifeguards

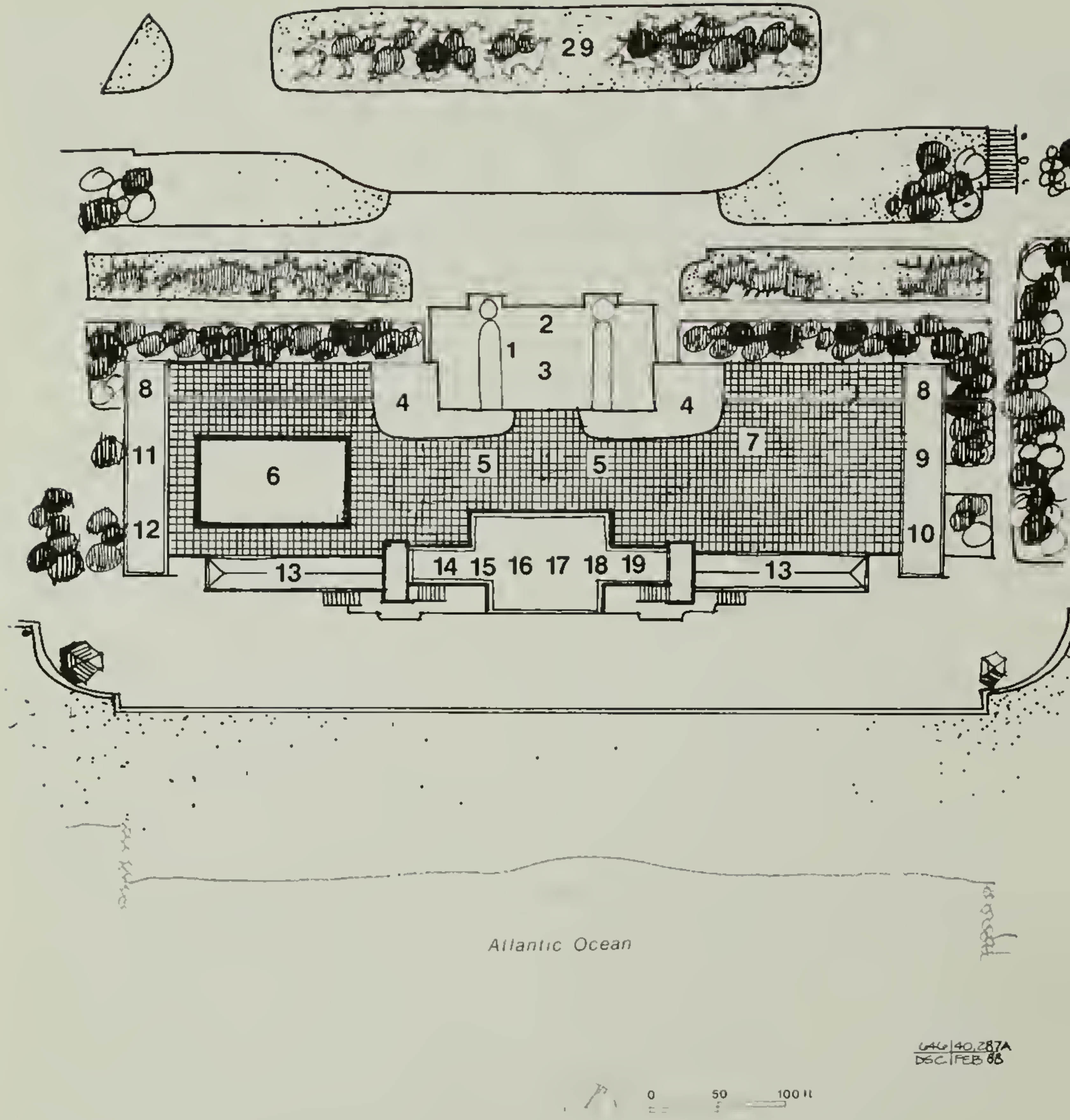
OCEANSIDE PAVILION (1ST FLOOR)

13 Surfshops
14 Food Court
15 Ice Cream Parlor

OCEANSIDE PAVILION (2ND FLOOR)

16 Restaurant
17 Catering
18 Management
19 Roof Terrace

Development and Maintenance Costs — The concessioner will make the necessary investments to rehabilitate the Jacob Riis Bathhouse in accordance with the standards established for this purpose by the secretary of the interior. A portion of the income from fee activities will be used to cover the costs of maintaining the facilities.



Riis Park . . . Bathhouse
Proposal
United States Department of the Interior
National Park Service

ALTERNATIVES TO THE PROPOSAL

In compliance with the National Environmental Policy Act (NEPA), alternatives to the proposal are considered. The environmental consequences of implementing the alternatives are described in this section.

NO ACTION - CONTINUATION OF EXISTING CONDITIONS ALTERNATIVE

Under this alternative current management practices, staffing levels, and facilities would remain essentially unchanged. Routine maintenance and limited repair of sites and facilities would continue, but major changes would only be made in response to emergencies and would not otherwise be planned for or anticipated. Park use would continue to gradually diminish if facilities continued to deteriorate without substantial rehabilitation.

1979 GENERAL MANAGEMENT PLAN RECOMMENDATIONS ALTERNATIVE

Fort Tilden

The western portion of Fort Tilden (about 150 acres) would be managed predominantly as a natural area, with the historic missile emplacement and gun batteries stabilized and interpreted. Particular attention would be paid to the badly deteriorated gun batteries, and depending on their individual significance, certain less important gun batteries would not be stabilized. Interpretation at the site would focus on the evolution of military hardware in the 20th century. Supervised group camping would be allowed on a permit basis (50-200 people). The proposed shuttle system route would be used by fishermen to gain access to the beach along Shore Road. The central roadway that bisects this western section would be designated as a bicycle trail, connecting Fort Tilden with West Beach.

In the eastern portion of Fort Tilden a new beach center would be built to serve a maximum of 4,000 people. Access would be by shuttle bus from either the Riis parking lot or from a proposed parking area at Floyd Bennett Field. Automobile parking would be provided for handicapped visitors in a lot behind the beach center (350 car spaces); specially designed access to the beach would be incorporated. (Barrier-free environments are a National Park Service policy, but special facilities can only be provided at certain locations.)

A large number of existing buildings at Fort Tilden would be reused as hostels and environmental study centers (the GMP did not specify building uses or users). Fort Tilden would provide large areas for sports, informal recreation, and picnicking. Dune restoration work would be undertaken near the new beach center (about 14 acres).

Riis Park

No specific development concepts were prepared for Riis Park in the 1979 GMP because the park was expected to remain substantially the same. The GMP indicated that the location and configuration of existing facilities would be retained, and that significant improvements would be made to modernize the facilities. The nature of the improvements was not stated, except that the bathhouse was to undergo intensive study and rehabilitation so that it would more fully support a wide range of recreational activities. Designated picnicking sites were to be established (250-550 people), but specific locations were not identified.

1986 RIIS/FORT TILDEN DCP PROPOSAL ALTERNATIVE

Fort Tilden

The treatment planned for Fort Tilden under this alternative is the same as those actions described under the proposal.

Riis Park

This alternative involves the reallocation of space for different uses in some areas and rearrangement of facilities in other areas of Riis Park. New structures in the form of shelters and restrooms would be built, and a major tree planting program would be undertaken.

The treatment of Riis Park would involve a two-part strategy. Part one requires that immediate attention be given to stabilizing the bathhouse complex to prevent further deterioration. The majority of spaces along the boardwalk side of the Beach Pavilion would be rehabilitated for continued provision of food services. National Park Service information, first aid, Park Police, and lifguard functions would continue to be provided here. Exterior stabilization would be limited to masonry repointing and consolidation as required, minor structural stabilization, and roof drain repairs. As an economy measure most of the facility would be "mothballed" or sealed off from public access, much as it is today.

Part two of the strategy would see the National Park Service continuing to explore possibilities for adaptive use of the bathhouse, including soliciting proposals from either public or private sector parties. The minimum required investment described above will stabilize the structure while maintaining the serviceability of the Beach Pavilion concessions and allow for adaptive reuse.

Future leasing packages would accept proposals to lease all Riis Park facilities. If the park receives no acceptable response to future RFP's (Requests For Proposals) for rehabilitation and adaptive reuse of Jacob Riis Park then the facility will remain in partial use as described above under part one of the strategy for treatment of the bathhouse. This situation would differ only from the no action alternative in that efforts would continue to seek funding for improvements.

ENVIRONMENTAL CONSEQUENCES

IMPACTS OF THE PROPOSAL

The impacts of the 1986 DCP proposal alternative, described in a subsequent section, are also applicable to this proposal. This is particularly true for the actions proposed at Fort Tilden. The exceptions are the additions and differences described below, which relate to the new recreational development.

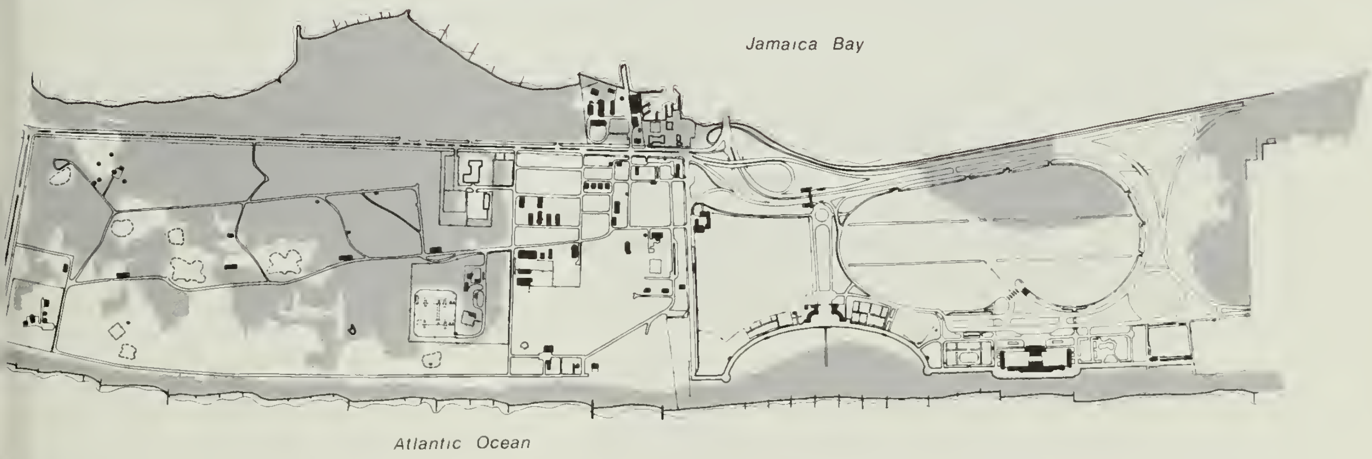
Natural Resources

Relocation of the golf course to the area east of the parking lot would eliminate the natural vegetation of the proposed site and greatly reduce its value as bird habitat. The approximately 30 acre area of low shrubland is unique on the Breezy Point Peninsula and its loss would contribute to the cumulative effect of minor habitat alterations that reduce urban habitat supporting local and migratory bird populations. The site is currently covered with mostly open grass, of several species, and low bush bayberry. Sumac is common and black pines are found closer to the residential area.

The habitat loss would be mitigated, in part, by landscape plantings on and around the golf course, including a buffer strip of trees near the residences. Native species would be used as much as possible, and integrated pest management would be applied.

According to the available floodplain map, part of the new golf course is within the 100-year floodplain, however, no permanent structural improvements are planned in this area. The large seawall on the Jamaica Bay side of the park seems to prevent flooding from that direction. Since this is a recreation area, this proposal is excepted from further floodplain compliance procedures as development of outdoor play areas, landscaping, and small parking lots. The sanitary facilities will be located outside the 100-year floodplain.

Development of docks and piers for the ferry system is also excepted from further floodplain compliance as an action functionally dependent upon water.



100 Year Flood Plain

The proposed development of the amphitheater and aquatic theme park are not within the 100-year floodplain or the coastal high hazard area and, therefore, do not require further floodplain compliance. However, this development will attract great numbers of visitors to a coastal barrier formation. It is, therefore, appropriate that measures be considered for the protection of visitors. To this end, the developer should prepare an evacuation plan to update the existing U.S. Park Police plan. Provisions should particularly consider handicapped visitors and visitors who have arrived by ferries or buses.

The floodplain map does not show the Riis Park Bathhouse to be within the 100-year floodplain, but flooding of the first floor of the bathhouse has occurred in recent years. Investigation will be needed to determine the correct configuration of the 100-year floodplain. If the bathhouse is within the 100-year floodplain, then the adaptive reuse, with interior development of restaurants and aquatic facilities, would require further floodplain compliance. In addition, the beach at Riis Park is subject to sand loss, and a severe storm event could possibly damage the bathhouse. This situation should be monitored, and sand nourishment of the beach may be necessary to protect the park.

The proposal does not differ from the 1986 DCP alternative regarding development actions at Fort Tilden. However, the increased numbers of visitors attracted to the park could create additional foot traffic that would present a greater threat to the stability of the dune system at Fort Tilden. Additional effort and monitoring would be required to manage the foot traffic in the dunes areas and ensure the protection of the dunes.

The proposal to dedicate a 22- to 30-acre area of Floyd Bennett Field runway as satellite parking and a shuttle bus staging area would affect the natural resources of the Floyd Bennett Field unit. Between 3,000 and 4,000 parking spaces would be needed at the field as long as the ferry and express charter bus systems were operating as anticipated.

The 1983 Development Concept Plan for Floyd Bennett Field proposed three staged levels of development. The transportation and parking proposals of the main plan element (B) called for parking for up to 2,000 automobiless. Plan element C parking another 1,000 automobiles, contingent upon development of a new direct link to the Belt Parkway to accommodate the additional traffic to and from the field. Most of the parking in the DCP proposal was around the historic Hangar Row development area. It was envisioned that visitors would explore the exhibits and services at Floyd Bennett Field and then shuttle to Riis Park or other areas for recreation and relaxation. The parking currently proposed as satellite parking for the amphitheater and aquatic theme park appears to be needed in addition to the parking planned in the Floyd Bennett Field DCP. The site of this additional parking has not been determined, but it would appropriately be located away from the Hangar Row area and, therefore, in some proximity to the areas managed for natural resources.

Approximately 70 percent of Floyd Bennett Field was zoned as a natural area in the 1983 DCP. This area has been dedicated to environmental preservation, study, and interpretation. Current natural resource programs include the Grassland Management Program, a cooperative program with Cornell University, Seatuck Wildlife Refuge, New York City Audubon Society, and Gateway National Recreation Area, that is actively managing over 100 acres of grassland habitat in the middle portion of the field between runways. This project is designed to help support populations of grasshopper sparrows, which are on the state threatened species list; short-eared owls (a bird of critical concern), and meadowlarks. The project monitors an additional 500 to 600 acres of grasslands around the field to provide information on bird breeding, vegetation, and succession.

A pond and trail development project in the northwest corner of the field, to promote waterbird populations is supported by a grant from the New York State Return-A-Gift-to-Wildlife Fund. The northern area of the field contains a conservation area protecting barn owls and 5 miles of interpretive trails.

The establishment of designated runway parking at Floyd Bennett Field would introduce noise, automobile exhausts, large numbers of people, and incidental garbage and debris close to natural resource areas. The disturbances would affect bird populations, including species of concern that are already diminished in urban areas because of cumulative losses of habitat.

Noise

Amphitheater performances would produce musical noise radiating outside Jacob Riis Park. Analysis by an acoustic consultant has calculated that requirements of the strict New York City Noise Control Code would be met if maximum music levels are restricted and sound abatement devices are employed.

The amphitheater would be oriented to the south to direct sound away from nearby communities. Stage house side walls and a high berm and wall around the pavilion would provide noise barriers, and speaker heights would be limited. Finally, amphitheater management would control the maximum sound levels produced.

Section 24-241.1 of the New York City Noise Control Code requires that "commercial music" must not create noise inside residences exceeding 45 dB in any one-third octave band, from 63 Hz to 500 Hz. This range includes the bass tones produced by popular bands. Analysis of the impact of sound affecting the residential areas shows that the noise ordinance levels would not be exceeded with proper management controls. Outside the nearest Roxbury residences the peak sound level, about 55 dB, should approximate that of an average office.

Air Quality

Increased numbers of automobiles at Riis Park would affect the air quality; however, the impacts do not appear to be significant, and no violations of air quality standards are anticipated. This is because the site is relatively isolated and subject to windy conditions, and the peak traffic impacts would only occur 10 to 15 times a year. If necessary, a detailed air quality analysis will accompany the project design.

Cultural Resources

Historic structures making up the Jacob Riis Historic District will benefit by having their facades restored to their original appearances and their interiors upgraded to meet the needs of today's visitors. The bathhouse interior, for example, will include a swim complex, restaurant, upgraded shower and restroom facilities, retail space, and park administrative support areas.

The 60 to 70 foot height of the amphitheater and waterslide structure will make them the tallest features in the Breezy Point District. The Fort Tilden Historic District will be approximately a half mile distant and will probably not suffer severe visual impact although the new structure will be visible at various points on the fort grounds and crowd noise from both the amphitheater and aquatic theme park will be audible at times.

The amphitheater and waterslide will be visible from almost anywhere in Riis Park. Selective plantings may be able to screen out the structure from various locales but cannot provide a total screen. The waterslide structure will be built on land slopes rather than on a superstructure to minimize obtrusive appearances. The materials to be used in the amphitheater and aquatic theme park will be chosen to be compatible with the brick and concrete construction of other structures at Jacob Riis Park.

The proposed amphitheater and aquatic theme park will displace the golf course, which was a feature of the original landscape at Jacob Riis. A new golf course will be designed on the opposite (east) side of the parking area. Although the loss of the golf course can be mitigated, there can be no mitigation for the loss of the golf course as an historic feature of the 1930s landscape plan.

Other than the golf course, proposed modifications of the recreational facilities at Riis Park will be compatible and in keeping with the 1930s landscaping and layout.

The amphitheater and aquatic theme park operations will increase park visitation, and with increased visitation comes added wear and tear on the historic landscape features and structures. This in turn will require additional maintenance and repair. The likelihood of vandalism within the park will increase.

Parking is proposed at Floyd Bennett Field. The proposed 3,000 to 4,000 spaces will be necessary in addition to the 2,000 parking spaces called for in the 1983 Development Concept Plan for Floyd Bennett Field. These actions will avoid disturbance of sensitive historic and natural areas at Floyd Bennett Field.

The February 1981 memorandum of agreement in the Gateway General Management Plan covered all necessary section 106 compliance required for implementation of actions outlined in the General Management Plan. Because the amphitheater/aquatic theme park, and the new golf course location were not discussed in the General Management Plan, the effects of these items will be the subject of separate Section 106 compliance documentation to be submitted to the New York State Historic Preservation Office and the Advisory Council on Historic Preservation for their review and comment.

Visitor Use

In addition to the benefits accrued by the rehabilitation and enhancement of the park's traditional recreational and cultural facilities, the proposal would add new valuable recreational resources. The aquatic theme park and the bathhouse pools would provide a variety of water recreational experiences. These facilities would be fresh water recreation alternatives to the ocean, and would include safe areas for children.

The amphitheater would expand the scale of performance offerings and offer new cultural opportunities at the park. Both the amphitheater and the water-theme park would expand the hours of operation of the park, and the proposal would more fully use available space within the park. More visitors could, therefore, be introduced to these new recreational and cultural opportunities.

The park would attract a new population of users from a broader regional base, without displacing the current visitors and use areas, particularly the nonfee areas. Some existing facilities would be relocated from their present sites, which could temporarily disorient and inconvenience visitors. In general, the rehabilitation and restoration of the park's facilities, along with the new developments, would upgrade the ambience of the park.

Access and Circulation

As part of the background information related to the proposal, the concessioner undertook detailed traffic studies of roadways at Riis Park and nearby access road. Appendix B contains the traffic impact assessment portion of these studies. The assessment report concludes on page FS-3 that "The analyses conducted assumed substantial increases in annual beach attendance (close to 75 percent) due to refurbishment of the area, plus _full_ attendance traffic to the proposed water park and amphitheater--a worst-case set of assumptions. Given these assumptions, on the busiest weekends of the peak summer seasons, the Riis Park development and related traffic service would operate acceptably given that FBF diversion strategies can attract between 20 to 30 percent of general Park-bound arrivals, ferry and express/charter bus service can attract significant ridership (about 50 and 35 percent of all peak summer Sunday water park and amphitheater attendees), and traffic engineering improvement measures are implemented. Levels of traffic operations would deteriorate to congestion conditions if the above strategies are not successfully implemented."

The need for further data gathering and analysis will be determined after review of this document.

Other Effects

Relocation of the golf course to the area east of the Riis Park parking lot would have the benefit of eliminating a nuisance area. The area has experienced some unlawful drinking, parking, car stripping, oil draining, and fires. These activities would be eliminated once the site is actively managed as a golf course.

IMPACTS OF THE 1986 RIIS/FORT TILDEN DCP PROPOSAL ALTERNATIVE

Natural Resources

The actions proposed in this alternative would not create significant adverse impacts on the natural resources of Fort Tilden and Riis Park. Construction work would cause a minor short-term increase in erosion but this would be mitigated with sediment traps and immediate reseeding. The dune and forest environment at Fort Tilden would be enhanced by the elimination of roads, structures, and fences, creating a continuous natural environment from the ocean through the dune system. The dunes would be protected by controlling vehicular and foot traffic and eliminating indiscriminate parking at undesignated locations. Established trails or boardwalks over the primary dunes would be used for environmental education and interpretive programs to eliminate haphazard foot traffic. Reducing dune erosion would allow stabilization of the dunes by native vegetation, which will be facilitated as needed by the park's natural resource management program. Elements of the proposal that would protect the dune environment at Fort Tilden would help preserve and enhance the natural and beneficial floodplain values by using them for educational, recreational, and scientific purposes that do not disrupt natural ecological conditions.

The proposals in this alternative include some actions within the 100-year floodplain. These occur mainly at Fort Tilden, since the 100-year floodplain at Riis Park appears to be along the beach and the bay side of the parking lot. The developments proposed within the 100-year floodplain are actions which are excepted from compliance with Executive Order 11988, "Floodplain Management." The categories of these actions, listed in section 5B of the implementing guidelines include picnic and camping facilities with appropriate sanitary facilities, outdoor play courts, access roads, foot trails, landscaping, and small parking lots. Design and construction of sanitary facilities in the 100-year floodplain would require consideration of floodproofing.

Developments are not proposed within coastal high-hazard areas, nor are any critical actions proposed within the 500-year floodplain. Almost the entire area of Fort Tilden and Riis Park is within the 100- or 500-year floodplains; therefore, the minimal developments proposed would have to be located in the 500-year floodplain. The consortium facilities would remain in the 500-year floodplain, and the plan proposes permitting the consortium to build cabins and a dining hall for the program. In the interest of protecting this special population of park users, the park would require that the consortium submit for approval, a plan for emergency evacuations. The park has a storm emergency plan, which includes automatic notification to the park in the event of storms. The U.S. Park Police's general orders contain an evacuation plan, which would be revised to reflect the new development. These mitigating measures would help ensure protection of all visitors to this coastal park.

The marine intertidal wetlands consisting of the Riis and Tilden beaches will not be impacted by the plan because neither development nor shoreline stabilization is proposed. Monitoring of the sand transport system should continue, particularly at Bay 1 beach in Riis Park immediately downdrift from the 149th Street groin. The "palustrine scrub/shrub broad-leaved deciduous/narrow-leaved persistent emergent seasonal wetland" identified by the U.S. Fish and Wildlife Service in northwestern Fort Tilden is in a use-by-reservation zone that would continue to receive limited visitation. Effects on this wetland should, therefore, remain minimal.

In consideration of the above discussions, additional compliance with floodplain management and wetland protection guidelines, would not be required.

Cleanup of western Fort Tilden would improve visual quality and preserve the wildlife habitat that supports the migrating raptor species. Shore birds and other rare avian species known in the vicinity of the planning area would not be impacted by the proposal and might eventually come to inhabit Fort Tilden, because the continuation of restricting use would minimize impacts to potential nesting areas.

Increases in noise pollution will be expected during construction. No significant increases in visitors or automobiles are expected on the peninsula, so no significant effect on air quality is anticipated. Minor effects of construction on air quality will be mitigated as they occur.

Cultural Resources

Proposed stabilization and rehabilitation of military structures in western Fort Tilden would protect those cultural resources on the National Register of Historic Places. The deteriorating structures would be stabilized, and used for the park's interpretive programs about the coastal defense system. A structural study would provide information needed to assess the feasibility of the proposed stabilization or rehabilitation of these military structures. Stabilized structures would be secured to prevent entry by unauthorized persons, to avoid accidental injuries, and to reduce the potential for vandalism.

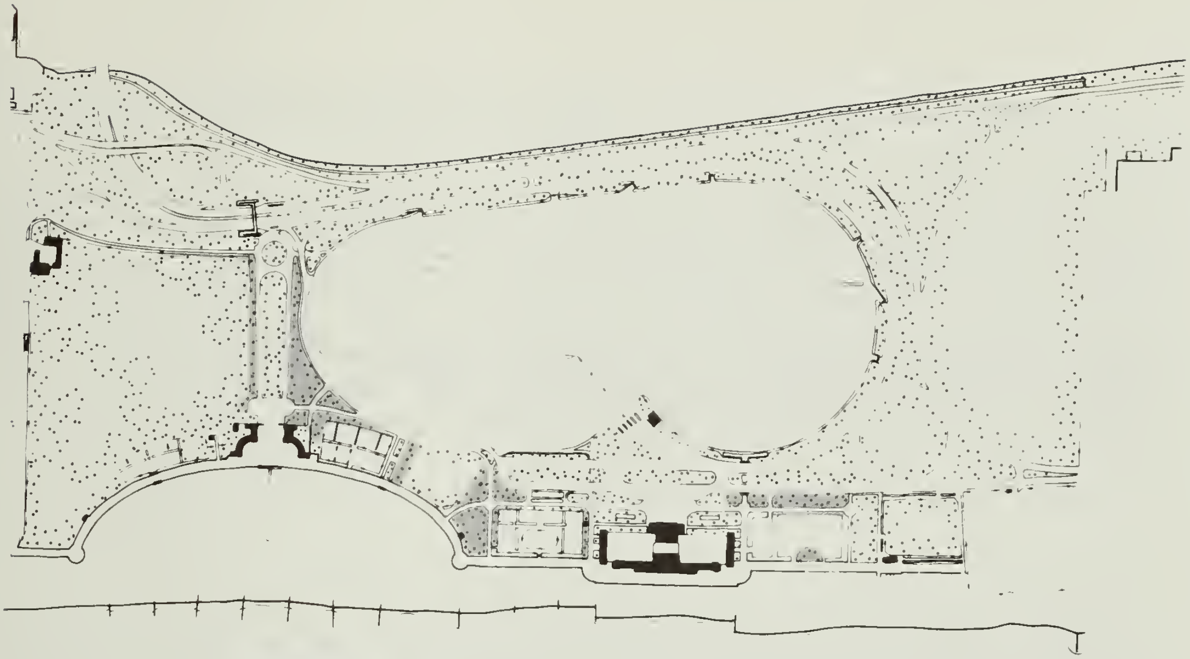
Removal of structures at the Fort Tilden and Riis Park historic districts may be necessary if the study reveals that repairs are not feasible and that conditions present a safety hazard. Such removal will cause an adverse effect on the districts' National Register qualities. This effect can be mitigated by architecturally and photographically recording the structures before demolition. Representative structures would be preserved wherever possible. All plans for the Riis bathhouse should propose sufficient preservation of the bathhouse's exterior character so that there would be no adverse effects on the structure's National Register qualities.

Proposed modifications of the recreational facilities at Riis Park would be in character with the landscaping and layout of this historic district. The historic district's significance as an example of recreational architecture of the 1930s would be respected and enhanced in design work wherever possible, and therefore the proposed actions would have no adverse effect on the district.

Although a parkwide archeological survey was conducted by John Milner Associates in 1977, this survey was by no means complete. Still, the possibility of prehistoric archeological resources is remote on Breezy Point because the peninsula did not exist before the mid 1800s. Before that time, there may have been a low island or bar. It is possible that archeological features could still exist from this time. Evidence of an earlier beach was found in coring samples taken during 1921 in the vicinity of Battery Harris. Charcoal and wood traces were encountered in sands 10 feet below sea level.

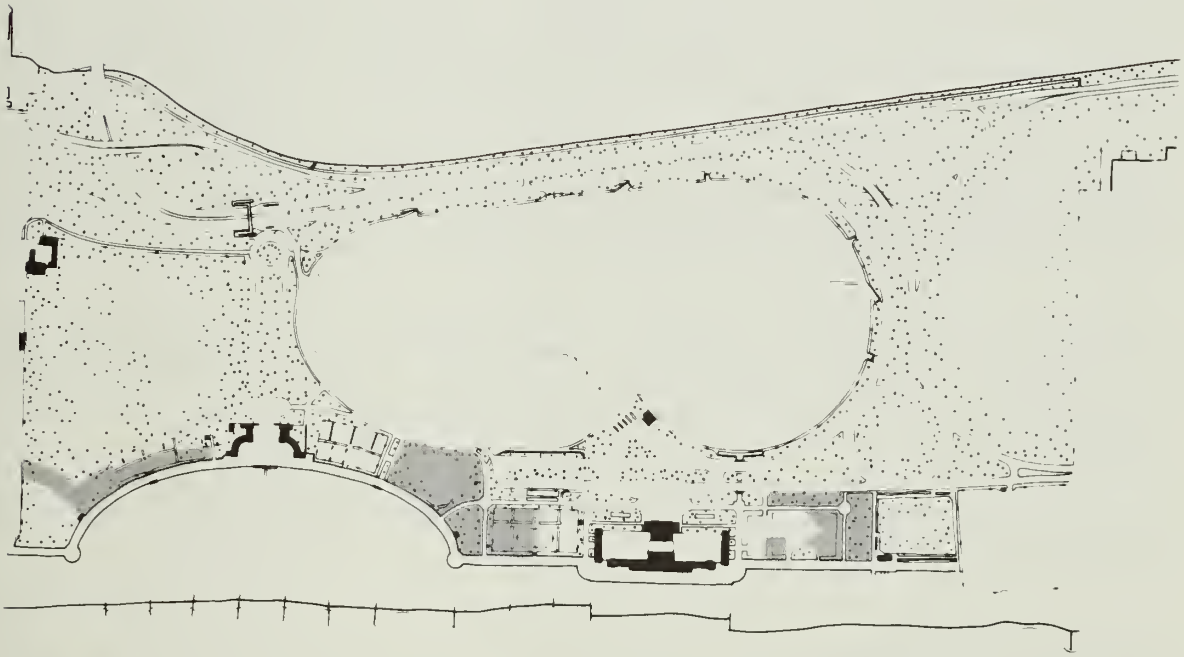
As specific areas were developed, any ground-disturbing activities would require evaluation and possible onsite investigation by an archeologist. Known sites would be avoided. The potential for revealing information related to historic occupation of Fort Tilden exists in the form of trash dumps and building foundations. If sites of this kind are discovered, they will be evaluated for the historical information they could provide.

In February 1981, a memorandum of agreement under the Programmatic Memorandum of Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers was concluded on the Gateway General Management Plan. This memorandum covered all necessary 106 compliance



▨ Areas with shade used for family picnicking (2.5 acres)

Existing



▨ Areas recommended for development as family picnic areas (7.2 acres)

Proposed

64cm|4", 25.4cm
DE[illegible] FEB [illegible]

Picnicking

actions for this Development Concept Plan/Environmental Assessment except for those that differ from the actions described under the General Management Plan.

Implementing actions that affect either Jacob Riis Park or the historic zone at Fort Tilden will be reviewed and documented through use of the "Assessment of Effect" form (XXX form). Individual actions affecting National Register properties that are proposed and that differ from the General Management Plan or Development Concept Plan proposals would require review by the New York State Historic Preservation Officer and the Advisory Council on Historic Preservation. The removal of structures in the Fort Tilden historic district was not described in the General Management Plan and will, therefore, require such Section 106 reviews.

Visitor Use

The alternative's proposed actions would benefit New York City residents by rehabilitating the park's recreational facilities and providing a greater variety and availability of recreational experiences. Recreational qualities would be improved by upgrading existing facilities, providing needed visitor amenities, and creating new activity areas. Modification and expansion of the play areas would increase opportunities for children's recreation and make the area more attractive for family use. Sports play would be improved by the reconstruction or repair of deteriorated courts. Provision of visitor amenities, such as restrooms, seating, water, and shade, would help enhance the visitor's experience. The establishment of picnic areas would especially meet a serious need of current park users. This action would eliminate the current practice of picnickers crowding onto undesignated areas. The creation of new sports areas and other gathering places would help serve the wide range of age groups using the park. Installation of a ramp and boardwalk at bay 3 would provide access to the beach for the disabled.

Cleanup and landscaping and more automobile-free areas would make the park more attractive for visitors. Public safety would be improved by the removal or repair of hazardous structures at Fort Tilden. Improved wayfinding systems would help orient visitors to park activities and facilities.

Some minor disruptions to visitors would occur during construction and relocation of facilities.

Access and Circulation

Establishment of a single automobile entry/exit and removal of unneeded roads at Fort Tilden would clarify access and circulation patterns, reduce visitor confusion, and eliminate unnecessary driving. Development of foot paths would reduce pedestrian/vehicle conflicts. The maintained road through western Fort Tilden would provide access to sites of interest for visitors, including those with mobility limitations. The designation of bicycle routes would improve wayfinding and facilitate bicycle access to park sites.

Informational signs, seating, and shade at the Riis Park bus stops will eliminate confusion about bus lines and provide a more pleasant waiting area.

Because the park's recreational facilities are generally being rehabilitated and not expanded, only slight increases in the number of visitors might be expected. These uses should not contribute significantly to changes in traffic volumes and patterns on the Breezy Point Peninsula.

Park Management

Changes in traffic patterns would facilitate monitoring and control of vehicles in Fort Tilden. Maintenance vehicle traffic in the park would be reduced by establishing a separate maintenance area. Redesign of staff parking near the Riis Park bathhouse would provide park police with convenient alternatives to parking vehicles on the boardwalk and would allow safer more direct access to the boardwalk for emergency vehicles. Cleanup and repair of derelict structures would help park management by eliminating safety hazards and reducing vandalism.

IMPACTS OF THE NO ACTION ALTERNATIVE

Natural Resources

The effects of this alternative would differ only slightly from those of the 1986 DCP alternative. The dune area at Fort Tilden would not be enhanced by a cleanup, but a continuous environment could still be provided by the administrative action of closing Shore Road.

Cultural Resources

Lack of historic preservation action will allow the normal deterioration of the military structures to continue and would result in an adverse effect on the Fort Tilden historic district. Deterioration of the historic resources of Riis Park would also not be retarded.

Visitor Use

Without physical changes in the park's facilities it would not be possible to meet the recreational needs of current park users. Deteriorating recreational sport facilities would not be repaired or replaced, and the quality and amount of use would continue to decrease. New children's activity areas would not be developed, therefore, family experiences would not be improved. Without staff reassignments additional recreational programs will not be possible. Site amenities such as shade, water, seating, and tables and chairs will not be provided. Visitors will continue to make do with inadequate facilities, or attempt to bring their own furniture with them. If park space is not reallocated, visitors presently engaging in picnicking in crowded unauthorized landscaping areas will continue to do so with the continuation of impacts on the landscaping vegetation. Under this alternative the central ballfield will not be relocated, therefore, the space required for the many picnickers will not be available.

Access and Circulation

Pedestrian/vehicle conflicts, excess driving in Fort Tilden, and confusion regarding wayfinding would continue without changes in traffic patterns and development of foot paths and bike trails.

IMPACTS OF THE 1979 GENERAL MANAGEMENT PLAN RECOMMENDATIONS

The 1979 *Final Environmental Statement for the Gateway General Management Plan* described the general impacts of development throughout the park. That *Final Environmental Statement* is available for review at park headquarters.

With the anticipated increase in the number of park visitors, the *General Managment Plan* calls for more extensive development of Fort Tilden. This volume of use would have a greater impact on the natural and cultural resources of Fort Tilden. Vandalism and littering could have an adverse effect on the historic district. Increased foot traffic could cause dune erosion and inhibit park attempts at dune stabilization and restoration of coastal vegetation.

The beach center at Fort Tilden would provide additional recreational facilities for park visitors, which would require increased staffing and park maintenance.

OTHER COMPLIANCE PROCEDURES

In addition to the NEPA documentation process, other specific compliance and permit requirements that must be considered during actions implementing either the proposal or alternatives include the following:

> Water systems must conform with EPA standards and comply with or exceed all primary and secondary regulations as well as NPS guidelines on employee and visitor health.
>
> Any pesticide use necessary to implement the plan will be coordinated with the Washington and regional NPS pesticide coordinators; and be applied in accordance with the park's approved Integrated Pest Management Plan.
>
> Design of park facilities will comply with the laws and regulations and provide the maximum feasible accessibility under the constraints on the park.
>
> U.S. Army Corps of Engineers permits and U.S. Coast Guard approvals would be needed for development of ferry docks and service.
>
> Alterations in New York City roads and streets would require coordination and approvals from the New York City Departments of Transportation and City Planning.
>
> Water supply tapping and sewer connections require permits from New York City.
>
> A New York State water quality certificate will be needed, and federal, state and city air quality approvals may be needed.
>
> Section 106 consultations will be undertaken with the Advisory Council on Historic Preservation and the New York State Historic Preservation Officer, as previously described in the section on cultural resources impacts.

COASTAL ZONE MANAGEMENT CONSISTENCY DETERMINATION

The National Park Service has studied the state of New York *Coastal Management Plan* and has determined that the proposal for recreational development and management of Riis Park and Fort Tilden is consistent, to the maximum extent practicable, with the state of New York Coastal Management Program. This consistency determination addresses the proposal's relationship to the program's policies on dunes, beaches, barrier islands, and other natural protective features; public access to water-related recreation resources; encouragement of water-dependent recreation; protection of historic and cultural resources; and New York City's policies on urban recreation and beach protection.

Policy 12 - Undertake activities or development in the coastal area to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features, including beaches, dunes, barrier islands, and bluffs.

The proposal calls for maintaining the natural features of the Fort Tilden coast. Development of the dune system will be encouraged by eliminating vehicular traffic on Shore Road which cuts behind the foredunes. Without traffic, sand will be able to accumulate over the road and eventually re-establish the continuity of the dune system. Erosion of the foredunes will be decreased by eliminating indiscriminate parking and crossing of the dunes at undesignated locations. Beach users will be encouraged to use boardwalk dune crossings to further minimize erosion and to encourage stabilization of dune vegetation.

Vehicular access to the fisherman's parking area serviced by Shore Road will be provided by a road through the less environmentally sensitive area farther from the beach.

Policy 19 - Protect, maintain, and increase the level and types of access to public water-related recreational resources and facilities.

The proposal would attract increased visitors to the coastal park. To avoid increases in automobile traffic congestion, additional types and levels of transportation are proposed, including ferry service, charter buses, and shuttle buses.

The shuttle system to Fort Tilden that was described in the General Management Plan has not been included in this Development Concept Plan. It will not be practicable for the National Park Service to institute comprehensive transportation service on Breezy Point until the West Beach and Tip Beach areas of the Breezy Point unit are developed for intensive recreational use. This action is not expected to occur within the timeframe (5 to 10 years) of this Development Concept Plan. This transportation system would be compatible with the present proposal and is, therefore, not precluded from future implementation.

The DCP maintains existing access points and includes elements that improve convenience and efficiency for visitors arriving by cars and buses.

Policy 21 - Encourage and facilitate water-dependent and water-enhanced recreation and give priority over nonwater-related uses along the coast.

Development of the aquatic park would provide additional water-dependent recreation at Riis Park. The rehabilitation and development of other recreational facilities at Riis and Tilden will make the park generally more attractive to visitors and encourage use of water-related and nonwater-related recreational facilities. The addition of site amenities and park activities will also encourage use of the beach, boardwalk, and play areas by a variety of user groups.

Policy 23 - Protect, enhance, and restore structures, districts, areas, or sites that are of significance in the history, architecture, archeology or culture of the state, its communities, or the nation.

The proposal calls for stabilization of the military structures in western Fort Tilden that are in the historic district, which is listed on the National Register of Historic Places. All proposed development and modifications of recreational facilities within the Riis Park historic district, which is listed on the National Register, will be coordinated with the New York State Historic Preservation Office and the Advisory Council on Historic Preservation. The proposed actions in the *Development Concept Plan* that are the same as those in the *General Management Plan* are covered under the necessary 106 compliance actions.

Policy 33 - Use best management practices to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.

All construction actions under the proposal will incorporate sediment control devices to minimize the minor short-term effects on water quality. Hay bale barriers or silt fencing will be placed between construction sites and the ocean. All disturbed areas will be seeded and mulched as soon as possible.

In addition to the state policies, the New York City Waterfront Revitalization Program contains policies relevant to this proposal:

New York City Policy F: Give priority to the development of mapped parklands and appropriate open space where the opportunity exists to meet the recreational needs of less mobile user groups, and communities without adequate waterfront park space and/or facilities.

The proposal contains actions that will enhance the park for use by urban visitors, including immobile user groups. A ramp for handicapped access to the beach is proposed at Riis Park, and the adventure playground at Fort Tilden will be suitable for handicapped children. A focal point for seniors will be created by concentrating activities at a central location on the boardwalk. Introduction of additional seating, shade, and other amenities will also benefit senior visitors. The increase in picnic areas will greatly benefit members of communities without adequate waterfront park space or facilities.

New York City Policy G: Maintain and protect New York City beaches to the fullest extent possible.

The beaches at Riis Park and Fort Tilden are being maintained for various recreational uses, including swimming, fishing, and viewing the natural scene. The sand movement dynamics along the beaches will be monitored to ensure that future losses by erosion will not occur without proposed remedial actions.

CONSULTATION AND COORDINATION

CONSULTATION AND COORDINATION

The following agencies will be sent copies of the draft Development Concept Plan/Environmental Assessment for review and will also receive copies of the final plan for their information:

Federal

- Advisory Council on Historic Preservation
- Department of Agriculture
  - Soil Conservation Service
- Department of the Army, Corps of Engineers
- Department of Commerce
  - National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- Department of Education
- Department of Energy
- Department of Housing and Urban Development
- Department of the Interior
  - Bureau of Land Management
  - Fish and Wildlife Service
  - Geological Survey
- Department of Labor
- Department of Transportation
  - Coast Guard
  - Federal Aviation Administration
  - Federal Highway Administration
  - Urban Mass Transit Administration
- Environmental Protection Agency
- Federal Emergency Management Agency
- General Services Administration

New York State

- Department of Environmental Conservation
- Department of State, Division of Coastal Resources and Waterfront Revitalization
- New York State Office of Parks, Recreation and Historic Preservation
- Regional Clearinghouse
- State Historic Preservation Officer

New York City

Department of City Planning
Department of Environmental Protection
Fire Department
Health and Hospitals Corporation
Landmarks Preservation Commission
Mayor's Office for Finance and Economic Development
Department of Parks and Recreation
Police Department
Department of Ports, International Trade and Commerce
Department of Transportation

Other

Metropolitan Transit Authority
Port Authority of New York and New Jersey
Triborough Bridge and Tunnel Authority

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
100 Grange Place
Room 202
Cortland, New York 13045

March 5, 1984

Mr. Benjamin H. Biderman, Deputy Assistant Manager
United States Department of the Interior
National Park Service
Denver Service Center - Northeast Team
5600 Columbia Pike, Room 312
Falls Church, Virginia 22041

Dear Mr. Biderman:

This responds to your letter of February 1, 1984, requesting information and our comments to your proposal entitled Gateway National Recreation Area, Package Number 141C, Riis Park and Fort Tilden, Prepare Development Concept Plan for Riis Park and Fort Tilden.

Except for occasional transient individuals, no federally listed or proposed endangered or threatened species under our jurisdiction are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required with the U.S. Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of federally listed endangered and threatened species in New York is enclosed for your information.

Marine species are under the jurisdiction of the National Marine Fisheries Service. Inquiries should be directed to:

Mr. Douglas Beach
National Marine Fisheries Service
7 Pleasant Street
Gloucester, Massachusetts 01930

Wetlands found on the project site mapped as part of the National Wetlands Inventory include marine intertidal irregularly flooded beach (M2BBP), marine intertidal regularly flooded beach (M2BBN), estuarine intertidal irregularly exposed flat (E2FLM), estuarine intertidal regularly flooded flat (E2FLN), estuarine intertidal irregularly flooded narrow-leaved persistent emergent wetland (E2EM5P) and palustrine scrub/shrub broad-leaved deciduous/narrow-leaved persistent emergent seasonal wetland (P SS1/EM5 C) as shown on the enclosed map. The proposed actions should have minimal impacts on these environmentally sensitive areas. Potential waterfowl and waterbird nesting areas such as fore dune, dune, back dune, and wetland areas outside of active recreation areas should have restricted human activity to minimize impacts to these breeding birds.

Surf fishing is a popular activity in the Fort Tilden area. Access to the beach should be maintained for this recreational activity. The access area should be defined and oriented to have the least possible encroachment on these environmentally sensitive areas identified above.

Thank you for the opportunity to review this plan. If we may be of further assistance, please contact Mr. Tom Sperry of my Long Island staff at 516-282-3300 or FTS: 666-3300.

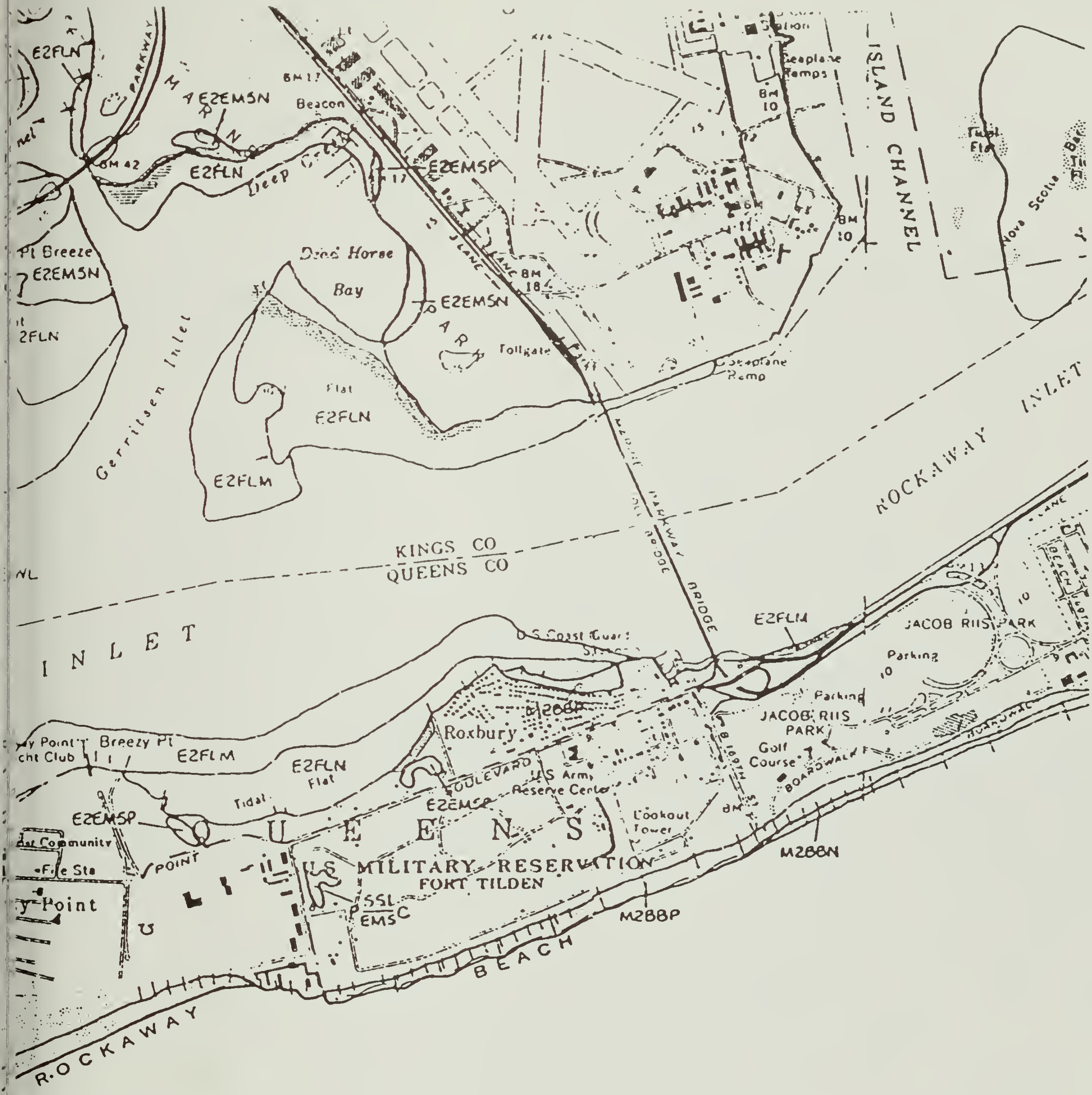
Sincerely yours,

Paul P. Hamilton

Paul P. Hamilton
Field Supervisor

Enclosures

xc:
NYSDEC, Albany, NY
NMFS, Gloucester, MA
NMFS, Milford, CT
NPS, Gateway, Attn: Tanacredi



LEGEND

P $\frac{\text{SSI}}{\text{EMS}}$ C ....Palustrine scrub/shrub broad-leaved persistent emergent wetland

M2BBP ..... Marine intertidal irregularly flooded beach

M2BBN ..... Marine intertidal regularly flooded beach

APPENDICES

APPENDIX A

NATIONAL REGISTER OF HISTORIC PLACES

INVENTORY -- NOMINATION FORM

m No 10-306 (Rev 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC
Fort Tilden Historic District (Gateway NRA)

AND/OR COMMON
Fort Tilden

2 LOCATION

STREET & NUMBER
Rockaway Beach Boulevard

_NOT FOR PUBLICATION

CITY, TOWN
New York

_ VICINITY OF

CONGRESSIONAL DISTRICT
11

STATE
New York

CODE
36

COUNTY
Queens

CODE
81

3 CLASSIFICATION

CATEGORY
X DISTRICT
_BUILDING(S)
_STRUCTURE
_SITE
_OBJECT

OWNERSHIP
X PUBLIC
_PRIVATE
_BOTH

PUBLIC ACQUISITION
_IN PROCESS
_BEING CONSIDERED

STATUS
X OCCUPIED
_UNOCCUPIED
_WORK IN PROGRESS

ACCESSIBLE
X YES: RESTRICTED
_YES: UNRESTRICTED
_NO

PRESENT USE
_AGRICULTURE
_COMMERCIAL
_EDUCATIONAL
_ENTERTAINMENT
_GOVERNMENT
_INDUSTRIAL
_MILITARY
_MUSEUM
X PARK
_PRIVATE RESIDENC
_RELIGIOUS
_SCIENTIFIC
_TRANSPORTATION
_OTHER:

4 AGENCY

REGIONAL HEADQUARTERS: *(If applicable)*
National Park Service, North Atlantic Region

STREET & NUMBER
15 State Street

CITY, TOWN
Boston.

_ VICINITY OF

STATE
Mass.

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.
Queens County Courthouse

STREET & NUMBER
45th Avenue

CITY, TOWN
New York

STATE
NY

6 REPRESENTATION IN EXISTING SURVEYS

TITLE
None

DATE

_FEDERAL _STATE _COUNTY _LOCAL

DEPOSITORY FOR SURVEY RECORDS

CITY, TOWN

STATE

CONDITION		CHECK ONE	CHECK ONE
_EXCELLENT	X DETERIORATED	_UNALTERED	X ORIGINAL SITE
_GOOD	X RUINS	X ALTERED	_MOVED DATE______
_FAIR	_UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Battery Harris Casemates (HS-406,410)
Battery Harris originally (1921-24) consisted of two huge circular concrete platfor
The guns were exposed without benefit of any overhead protection. The original plat
remain although covered by earth, to a great extent at Structure 406.

The two guns of Battery Harris were roofed over in 1941-43 by massive concrete casem
approximately 850 feet apart. These two basically identical structures together com
Battery Harris. Each emplacement was formerly equipped with one 16-inch gun. The t
emplacements are roughly rectangular, single-story concrete structures constructed i
dome fashion and covered with earth and sand so that they resemble two oval hills ap
imately three hundred feet long and sixty feet high. The walls, floors, roofs and
interior partitions are all concrete. Each bunker is laid out with two central corr
one running north-south and one east-west. The guns were positioned in the southern
of the north-south corridor. There is a circular concrete hood which projects over
southern aperture of each emplacement designed to protect the guns from direct hits.
There are six rooms leading off the two corridors: two powder rooms: two shell room
one tool room, and one latrine. There were steel grill gates installed in all four
corridor entrances. These gates are in varying stages of deterioration. There are
no mechanical or electrical facilities left in the emplacements. Structure 410, Gun
and Structure 406, Gun #2, constituted an important element in the harbor defense of
York City due to the long range and destructive power of the 16-inch gun. Each gun
fired 2,100-pound projectiles for a maximum distance of 44,680 yards.

Battery Harris Magazines (401, 405, 409, 414)
These magazines, dating from 1922 (401 was constructed later during the early 1930s)
were constructed to store the shells and powder used by the twin guns of Battery Har
(No. 406, 410). These four buildings are basically identical. Each building is a
rectangular, single-story structure with a built-up low gable roof. The roof decks
are composed of precast concrete planks and are supported by steel joists. The tile
block curtain walls are supported by paired columns, the inner being steel and the
outer concrete. The buildings rest on concrete wall footings. The floors are concr
slabs with steel rails for the shell-moving machinery set into them. There are rais
concrete docks on either side of each building which run the length of their interio
There are rolling steel overhead doors in either end of each building. Each magazin
has a steel plate door in one gable end which is reached by a flight of concrete ste
These doors open onto the storage docks.

Battery Harris Bombproof Magazine (411)
This earth-covered reinforced concrete bunker-like magazine was built for storage of
shells and powder for Battery Harris. It was intended to be bomb-proof as contraste
to the other four Battery Harris magazines (401, 405, 409, 414) that are more expose
and not of the bunker class. This structure probably dates back to early 1940s when
Battery Harris was casemated in fear of aerial bombardment.

oo Magazines (403, 404)

ated to the north of Magazine #405, there are two later magazines constructed circa 3. These partially sunken concrete structures are of semi-cylindrical type known as oo Magazines. These two basically identical magazines are barrel vaulted structures h bulkhead entryways. Constructed of concrete, they have been banked with earth. y both have double wooden doors covered with tarpaper.

-inch Gun Batteries (315, 321)

two 6-inch guns of Battery Construction No. 220 (#315) were moved from an earlier tery to the east and installed here by 1942. The guns are gone but their concrete tforms are still partly visible under heavy brush. They were separated by 210 feet. concrete bunker was located to the rear and between the two gun platforms. It sists of a ground-level tunnel complex which was covered with sand and earth crowned a rectangular, single-story observation or fire control station. The lower bunker ms served as a magazine along with communications and other support functions. Its rances are blocked with sand and the complex cannot be entered. The fire control th on top of the bunker has a flat roof and an open hatchway in the northwest corner. el rungs are set into the wall of the booth and are the only remaining fixtures. re is a slit window which runs the length of the south side of the booth and for a rt distance north of the booth. There are no mechanical or electrical facilities talled in the bunker. Probably finished by 1942, Battery Construction No. 220 has a en-foot-thick front wall with a six-foot-thick rear wall.

western battery, Battery Kessler (#321), was origianlly known as West Battery in 17. At that time it consisted of two 5-inch guns mounted on circular concrete plat- rms. By 1942 an earth-covered concrete magazine bunker was constructed to the rear l between the two guns. As normal, the guns were removed around 1948 and the tforms are probably buried. The bunker is still extant, but it is a roughly rectang- ar single-story structure laid out with a main east-west corridor. To the south of th rridor are two powder rooms, a shell room, and two storerooms. The main corridor can entered from doorways on both the east and west ends. The entire structure, except the doors, is concrete. The double steel doors are still installed though somewhat sted. They are three inches thick. There are no mechancial or electrical facilities ill operating in the bunker.

pport Buildings (322, 402)

signed as support buildings for the batteries, these structures are rectangular 2 x 18 and 12 x 14 respectively), single-story constructions with concrete block lls and flat concrete slab roofs. Both were probably constructed around 1940.

Power Plants (407, 408, 412)
Buildings Nos. 407, 408, and 412 were known historically as Power Plants 2, 3 and respectively. The 3 formed part of Battery Harris. Power Plants 1 and 2 each sup power to one of the big guns and Power Plant 3 was a reserve unit to be placed in operation in the event the other power plants were temporarily out of commission. Built during the early 1920s, all three are of concrete construction.

Fire Control and Plotting Room (413)
The building which contained plotting and switchboard rooms in support of Battery is essentially an earth-covered concrete bunker. There is only one entrance which equipped with steel gates. The structure was probably completed in 1924.

Mine Casemate and Plotting Room (511)
This structure, built during World War II, formed part of a mine battery consistin three tactical units which were located at Fort Hancock, Fort Wadsworth, and Fort The mine casemate was the command post for the Fort Tilden branch of the submarine defenses.

It is a concrete bunker covered by sand and sod. It has a number of flues extendi the roof which probably served as ventilators. There are two entrances on the nor

Harbor Entrance Command Post (13)
Harbor Entrance (or Groupment) Command Post is the building in which the operation activities of Fort Tilden were coordinated. It is a one-story concrete bunker cov by sand and earth. The Command Post was constructed during World War II.

Telephone Pit (323)
This small rectangular, single-story building has a concrete slab hip roof. It is concrete masonry construction and the floor is of sand.

Management Exclusion:
Within the boundaries of Fort Tilden there are several structures which do not mee National Register criteria. These buildings either do not relate to the harbor pr tection theme of the fort or, while they are listed on the enclosed site map, no l exist. The structures include:

HS-316-320 Rifle range support structures
Pistol range
HS-324 No above grade remains
HS-325 No above grade remains
HS-514 No above grade remains
HS-14 Utility building

IFICANCE

RIOD
EHISTORIC
00 1499
00-1599
00-1699
00-1799
00-1899
00-

AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW

__ARCHEOLOGY PREHISTORIC
__ARCHEOLOGY-HISTORIC
__AGRICULTURE
__ARCHITECTURE
__ART
__COMMERCE
__COMMUNICATIONS

__COMMUNITY PLANNING
__CONSERVATION
__ECONOMICS
__EDUCATION
__ENGINEERING
__EXPLORATION/SETTLEMENT
__INDUSTRY
__INVENTION

__LANDSCAPE ARCHITECTURE
__LAW
__LITERATURE
X_MILITARY
__MUSIC
__PHILOSOPHY
__POLITICS/GOVERNMENT

__RELIGION
__SCIENCE
__SCULPTURE
__SOCIAL/HUMANITARIAN
__THEATER
__TRANSPORTATION
__OTHER (SPECIFY)

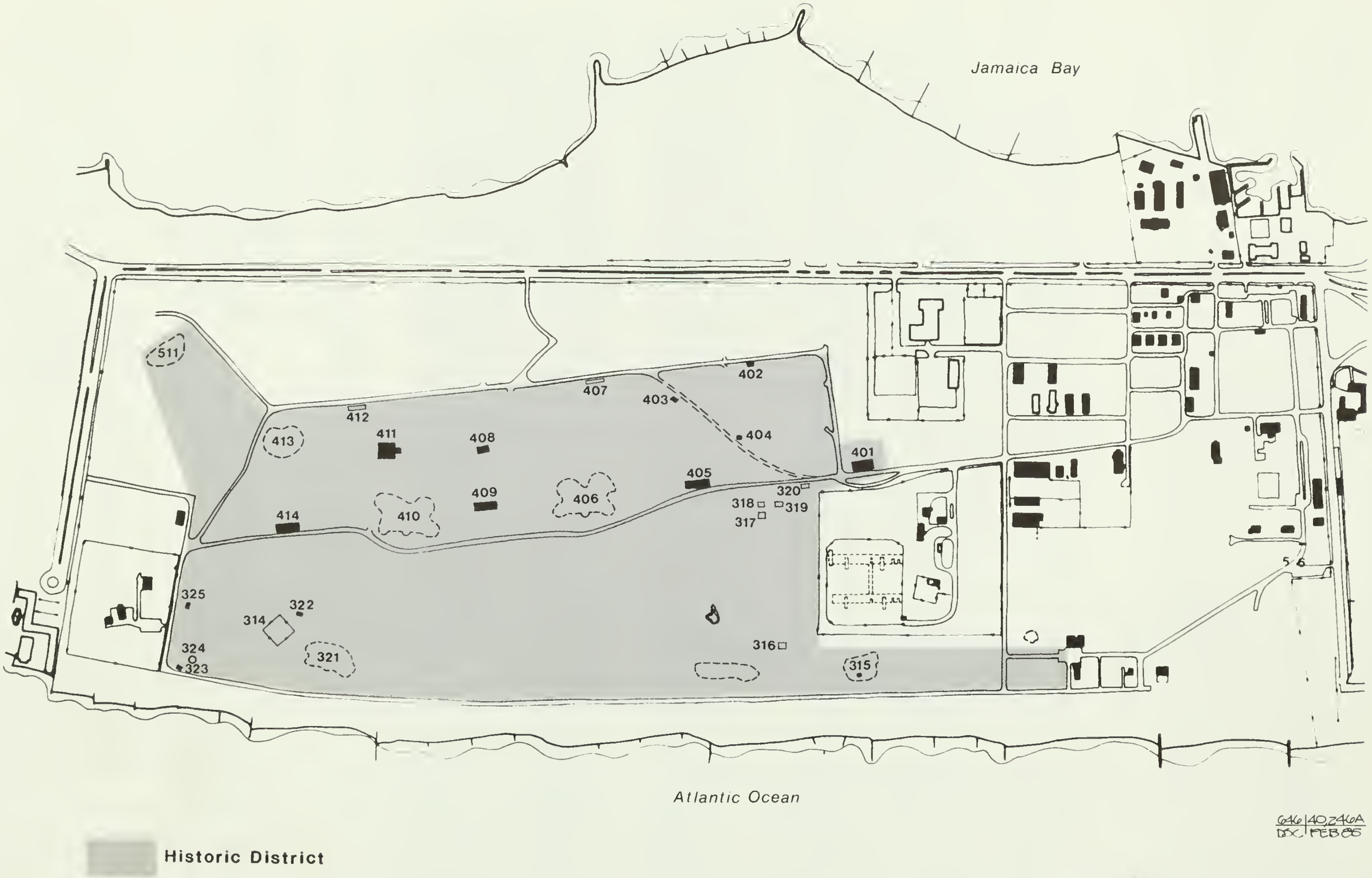
CIFIC DATES February 19, 1917 BUILDER/ARCHITECT U.S.Army

TEMENT OF SIGNIFICANCE

rt Tilden is significant because of its role in the defense network for New York rbor. Although Fort Tilden was not established until 1917, Rockaway Peninsula on whic is situated was recognized as early as 1814 for its strategic location and a blockhou erected there during the War of 1812. There is no evidence that the peninsula was rtified in subsequent years. Followings its construction, Fort Tilden joined Fort ncock on Sandy Hook, New Jersey, and Fort Wadsworth on Staten Island, New York, as rt of the outer defense system for New York City and the harbor from World War I rough the Cold War era.

twin emplacements of Battery Harris, moreover, illustrate the technical improvements ich took place in military weaponry between the two World Wars. Originally constructe open-topped 16-inch disappearing gun batteries, Battery Harris was updated during rld War II. Reinforced concrete casemates were built over the guns to protect them om aerial bombardment.

well as demonstrating technological developments in military history during the first lf of the twentieth century, the site, in conjunction with Fort Hancock, illustrates nplex reorganization of traditional coastal defense systems. Fort Tilden was part of Army's highly specialized system for the protection of New York Harbor from attacks om the sea. Defensive elements such as seacoast artillery, anti-aircraft artillery, bmarine mining and observation, lighting and listening posts were coordinated between two forts. Battery Weed and Fort Tompkins within Fort Wadsworth and Fort Hancock already on the National Register; it is appropriate that the third member of this iumvirate be listed as well.



646 | 40,246A
DSC | FEB 86

Historic District
Fort Tilden

United States Department of the Interior
National Park Service

MAJOR BIBLIOGRAPHICAL REFERENCES

Lewis, Emanuel Raymond. 1979 *Seacoast Fortifications of the United States: An Introductory History.* Annapolis: Leeward Publications Inc.

Torres, Louis. 1980 "Historic Structure Report, Historical Data Section of Fort Tilden, Gateway National Recreation Area, New York." Denver: National Park Service

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 98 acres

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	1 8	5 9 5 0 0 0	4 4 9 1 5 9 0
B	1 8	5 9 5 0 0 0	4 4 9 0 0 0 0
C	1 8	5 9 2 7 5 0	4 4 8 9 7 0 0
D	1 8	5 9 2 8 7 0	4 4 9 1 5 9 0

VERBAL BOUNDARY DESCRIPTION

The boundary of Fort Tilden Historic District is shown as the thick black line on the accompanying map.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
Dwight Pitcaithley, NARO, and Michael Wurm, GATE

ORGANIZATION
North Atlantic Region

DATE
6/23/82

STREET & NUMBER
15 State Street

TELEPHONE
617/-223-3778

CITY OR TOWN
Boston, MA

STATE
MA

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES____ NO____ NONE____

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ____National ____State ____Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST:

DATE

KEEPER OF THE NATIONAL REGISTER

Form No 10 306 (Rev. 10 74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC Jacob Riis Park Historic District (Gateway NRA)

AND/OR COMMON Jacob Riis Park

2 LOCATION

STREET & NUMBER Rockaway Beach Boulevard ☐ NOT FOR PUBLICATION

CITY, TOWN New York ☐ VICINITY OF

CONGRESSIONAL DISTRICT 11

STATE New York

CODE 36

COUNTY Queens

CODE 31

3 CLASSIFICATION

CATEGORY
- ☒ DISTRICT
- ☐ BUILDING(S)
- ☐ STRUCTURE
- ☐ SITE
- ☐ OBJECT

OWNERSHIP
- ☒ PUBLIC
- ☐ PRIVATE
- ☐ BOTH

PUBLIC ACQUISITION
- ☐ IN PROCESS
- ☐ BEING CONSIDERED

STATUS
- ☒ OCCUPIED
- ☐ UNOCCUPIED
- ☐ WORK IN PROGRESS

ACCESSIBLE
- ☒ YES: RESTRICTED
- ☐ YES: UNRESTRICTED
- ☐ NO

PRESENT USE
- ☐ AGRICULTURE
- ☐ COMMERCIAL
- ☐ EDUCATIONAL
- ☐ ENTERTAINMENT
- ☐ GOVERNMENT
- ☐ INDUSTRIAL
- ☐ MILITARY
- ☐ MUSEUM
- ☒ PARK
- ☐ PRIVATE RESIDENC
- ☐ RELIGIOUS
- ☐ SCIENTIFIC
- ☐ TRANSPORTATION
- ☐ OTHER

AGENCY

REGIONAL HEADQUARTERS (If applicable) National Park Service, North Atlantic Regional Office

STREET & NUMBER 15 State Street

CITY, TOWN Boston ☐ VICINITY OF

STATE Mass.

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC. Queens County Courthouse

STREET & NUMBER 45th Avenue

CITY, TOWN New York

STATE New York

6 REPRESENTATION IN EXISTING SURVEYS

TITLE Tony W. Wrenn, "General History of the Jamaica Bay, Breezy Point, and Staten Island Units," GATE

DATE 9/31/75 ☐ FEDERAL ☒ STATE ☐ COUNTY ☐ LOCAL

DEPOSITORY FOR SURVEY RECORDS NAR

CITY, TOWN

STATE

DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
_EXCELLENT	_DETERIORATED	_UNALTERED	x ORIGINAL SITE
X GOOD	_RUINS	X ALTERED	_MOVED DATE________
_FAIR	_UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Jacob Riis Park Historic District comprises three significant recreational buildings constructed between 1932-1937. These buildings are the core structures of Jacob Riis Park, now a unit of Gateway National Recreation Area, Queens County, New York. Jacob Riis Park (220 acres) occupies a mile-long section of the Rockaway Peninsula. Aside from swimming and sunbathing, the park provides other recreational activities such as fishing, hiking, boating, limited biking, and playing fields.

The Bathing Pavilion (HS 606), a massive structure commonly known as the Bathhouse, is a roughly T-shaped brick masonry building which consists of a rectangular, single-story unit built in 1932 and enlarged by a long, two-story addition on the south built in 1936-37. The earlier section is composed of a rectangular open court enclosed by high brick walls on the north, east, and west, and by the two-story addition on the south. In the center of the north wall there is a single-story projection which provides the entrance to the bathhouse and also houses bathhouse facilities. Its front is faced with a long arcade supported by corinthian pillars and topped with two octagonal turrets. Within the arcade there are pairs of double doors topped with fanlight transoms and separated by booths which provide entry into the vestibule of the locker area. This projection is covered with an asphalt shingled gable roof. The locker area, which is not covered, is divided into a women's area on the west and a men's area on the east. There are 10,000 simple wooden cabanas in this inner court. Passageways lead from each of these areas out onto the promenade through the southern addition. There are two identical single-story, rectangular brick buildings located on the southeast and southwest corners of this inner court. The eastern building houses a garage; and the western contains office space. The architects for this portion of the bathhouse were Stoughton and Plonck. In 1936 and 1937 the bathhouse was enlarged by the New York City Department of Parks. Clinton Lloyd was the chief of architectural design and Aymar Embury, II, was the architectural consultant for the Marine Parkway projects. The ocean side of the bathhouse is a long, two-story brick structure with concrete trim dominated by two octagonal four-story towers. The central area, projecting between the two towers, consists of an arcade supported by round concrete columns. Above the arcade is a rectangular concrete bay with rounded corners, a flat roof, and glass block windows, which contains a restaurant. On either side of this central projection, there are four rectangular, single-story projecting bays. The inner bays provide access to the locker courts; the outer bays contain the umbrella and deck chair concessions. There are symmetrical stairways on either side of these projections which lead up to a sun deck. Extending to the east and west of the central area, there are symmetrical two-story wings with gable roofs which terminate in square wings with hip roofs. The end wings contain refreshment bars on the ground level. The windows at the second story level are all glass block. The concession booths and the refreshment bars are indicated by steel-lettered signs mounted above the windows.

The two Central Mall Buildings (HS603 and 604), constructed in 1936-37, are twin brick and tile masonry buildings with concrete trim which face each other across the southern end of the mall. Both buildings consist of a square, two-story block (flanked by one-story wings) connected to a rectangular, single story wing to the south by a single

story, semicircular wing. The northern sections have full, recessed porticoes supp
by concrete columns. The semicircular wings have seven doorways with sliding steel
doors separated by brick piers. Both buildings have flat concrete roofs, concrete
cornices and concrete floors. The eastern building houses a cafeteria and the west
building contains offices, restrooms and a small bathhouse.

Although the other small buildings in the park--maintenance shops, refreshment stan
boiler room, golf course concession stand and electrical hut--are part of the Jacob
Riis Park, they do not add significance to the Historic District.

SIGNIFICANCE

OD	AREAS OF SIGNIFICANCE	CHECK AND JUSTIFY BELOW		
STORIC	_ARCHEOLOGY-PREHISTORIC	_COMMUNITY PLANNING	_LANDSCAPE ARCHITECTURE	_RELIGION
1499	_ARCHEOLOGY-HISTORIC	_CONSERVATION	_LAW	_SCIENCE
1599	_AGRICULTURE	_ECONOMICS	_LITERATURE	_SCULPTURE
1699	X ARCHITECTURE	_EDUCATION	_MILITARY	_SOCIAL/HUMANITARIAN
1799	_ART	_ENGINEERING	_MUSIC	_THEATER
899	_COMMERCE	_EXPLORATION/SETTLEMENT	_PHILOSOPHY	_TRANSPORTATION
	_COMMUNICATIONS	_INDUSTRY	_POLITICS/GOVERNMENT	X OTHER (SPECIFY)
		_INVENTION		Urban Planning Recreation

IC DATES 1932-1937

BUILDER/ARCHITECT Julius Burgevin, Stoughton & Pl
New York City Department of Pa

MENT OF SIGNIFICANCE

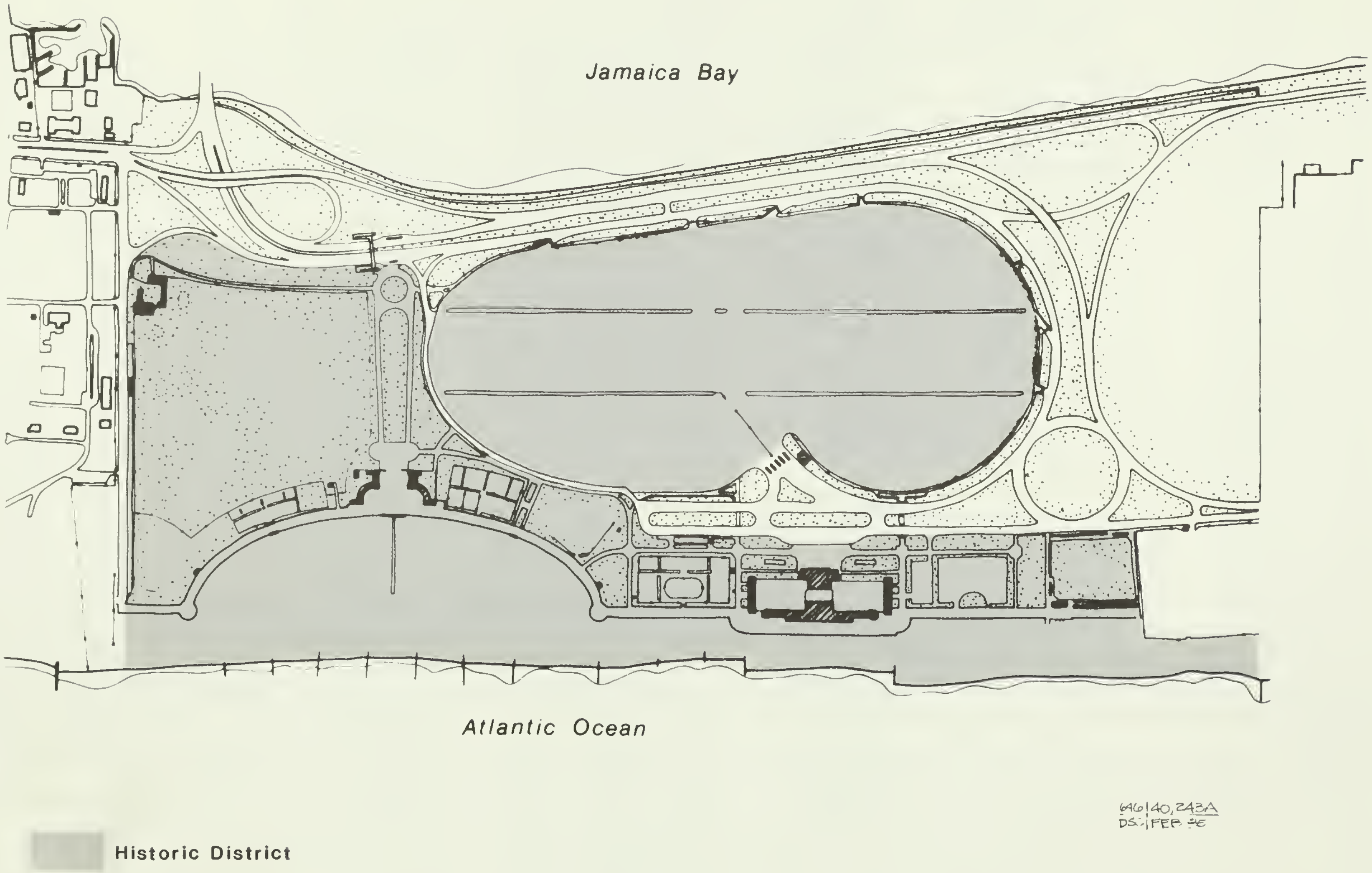
buildings which comprise the Historic District--especially the Bathhouse--are llent examples of recreational architecture of the early 1930's. They are the ral structures in a fine example of public park design and community planning during 1920's and 1930's. Also, Jacob Riis Park was completed through the Work Progress nistration, a Federal relief program of the Roosevelt Administration during the ession. Therefore, it is associated with this important social and government ram.

Main Bathhouse is a good example of Art Deco design adapted to architecture. The Deco style, characterized by streamlined geometric shapes and occasional polychrome erns, was particularly concentrated in New York City. The grounds at Jacob Riis extensively landscaped to include ample recreational facilities among a setting bout 20,000 trees and 50,000 shrubs. Julius Burgevin, the landscape architect, uded plantings of Japanese black pines, sea holly, bayberry, beach plum, as well each grass in his landscaping. The buildings and grounds, which have survived tively unaltered since 1937, remain good examples of prevalent aesthetic design ng the 1930's.

ough the development of the District as a city planned park begins in the early 's, the historical significance of the District derives from the implementation construction of the park during the 1930's. Labor costs were funded through the Progress Administration. WPA projects in New York, including the nation's est project, LaGuardia Airport, provided temporary relief for the city's unemployed.

ell as the district's association with a major innovation in public policy, the ict is also associated with Robert Moses, the influential New York City ssioner of Parks. In 1936, under Moses's direction, the bathhouse was enlarged, l was constructed, two semicircular buildings housing concessions and other ities were erected, and new recreational facilities were added. A sixty-two parking lot located north of the bathhouse, was completed. With a 14,000 car ity, it was the largest in the world at the time. Nearby the new Marine Parkway e, another Moses project, was finished giving a new access route to the seashore

Riis Park officially opened on July 3, 1937. It was maintained by the City of ork until 1972 when the park was acquired by the National Park Service with the ion of the Gateway National Recreation Area.



Historic District
Jacob Riis Park

United States Department of the Interior
National Park Service

MAJOR BIBLIOGRAPHICAL REFERENCES

American Guide Series: New York City Guide (New York, Random House, 1939)

Wrenn, Tony: General History of the Jamaica Bay, Breezy Point and Staten Island Units. Gateway National Recreation Area, New York, NY (n.p., 1975).

GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than 1 acre

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	18	595655 ~~[illegible]~~	4491880 ~~[illegible]~~
B	18	59[illegible]55	4490900
C	18	594280	4490320
D	18	594500	4491250

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

FORM PREPARED BY

NAME / TITLE
Ricardo Torres-Reyes, NARO

ORGANIZATION North Atlantic Region
DATE 2/15/77

STREET & NUMBER 15 State Street
TELEPHONE 223-3778

CITY OR TOWN Boston
STATE Mass.

CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES___ NO___ NONE___

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593 I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ___National ___State ___Local

FEDERAL REPRESENTATIVE SIGNATURE

TITLE
DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST
DATE

KEEPER OF THE NATIONAL REGISTER

GPO 899-214

Form No 10 300a
(Rev 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

CONTINUATION SHEET Jacob Riis ITEM NUMBER 10 PAGE

UTM REFERENCES

A	18 595 655	44 91 880
B	18 596 055	44 90 980
C	18 594 880	44 90 380
D	18 594 500	44 91 250

ENTRIES IN THE NATIONAL REGISTER

STATE NEW YORK

Date Entered JUN 17 1981

Name	Location
lis, Jacob, Park Historic District	Rockaway Point vicinity Queens County

Also Notified

norable Alfonse D'Amato

norable Daniel P. Moynihan
norable James H. Scheuer
. David F. Hales,
puty Assistant Secretary for
Fish and Wildlife and Parks
. F. Ross Holland, NPS

State Historic Preservation Officer
Mr. Orin Lehman
Commissioner
Parks and Recreation
Agency Building #1
Empire State Plaza
Albany, New York 12238

For further information, please call the National Register at (202)343-6401.

APPENDIX B

Riis Park Traffic Study
Technical Memorandum II
Phase Two
Traffic Impact Assessment
February 1988

Riis Park Traffic Study

Technical Memorandum II
Phase Two
Traffic Impact Assessment

February 1988

rsons
inckerhoff ® 100 YEARS

submitted by
Parsons Brinckerhoff
Quade & Douglas, Inc.

submitted to
Seaside Park
Associates, Inc.
A Joint Venture of
Halper Associates
and
P. Wallenberg
Development Co., Inc.

EXECUTIVE SUMMARY

Jacob Riis Park Development

The project entails the construction of an amphitheater with formal seating for 7,500 people plus blanket green area for an additional 7,500 attendees, and a multi-facility water park including several water slides and pools. The development would displace the existing 18-hole pitch-and-putt golf course, which would be repositioned in its entirety directly east of the Riis Park parking fields between Rockaway Beach Boulevard and Beach Channel Drive. Additionally, extensive refurbishment of the beach front facilities and structures is planned. The development plan would be completed in 1989.

Study Objective

The objective of this Traffic Study is to assess the impacts of the Riis Park project on traffic conditions in the area and to recommend traffic improvements that would mitigate significant impacts attributable to the development.

Trip Generation

The volume of vehicular trips generated by the development at Riis Park was determined based on standard professional references, lengthy discussions with National Park Service and developer officials, on-record data sources, and extensive data collection efforts conducted at the park.

As a component of the Riis Park project, the developer has proposed to implement a transportation plan that would reduce or limit the amount of vehicular traffic entering the Park area. Ferry and express/charter bus service will be provided from various parts of the surrounding boroughs, and satellite parking will be provided at Floyd Bennett Field with shuttle bus and ferry service connecting it to Riis Park. With these measures in-place and successfully operating, the project would generate (into the overall area) approximately 230 vehicles per hour (VPH) in the peak Sunday morning beach/water park arrival hour and about 1,570 VPH in the peak Sunday evening period when amphitheater patrons arrive and some beach-goers and water park patrons depart.

Expected Traffic Conditions

Traffic levels-of-service were determined for the critical roadway areas most likely to be affected by increased traffic, namely: the Rockaway Beach Boulevard traffic circle and the adjacent merge/diverge areas; the Marine Parkway Bridge and sections of Flatbush Avenue; Rockaway Beach Boulevard/Beach 149th Street intersection; and Rockaway Point Boulevard/Beach 169th Street intersection.

At the present time, there is some congestion at several of these locations, particularly at the south end of the bridge and west of the traffic circle near the parking fields' toll plaza. Considering typical background growth, growth associated with the beach front rehabilitation, and factoring in trips that would be generated by the water park/amphitheater uses indicates that some further deterioration in traffic conditions can be expected in the future if traffic improvements are not implemented.

Recommended Traffic Improvements

Between the Marine Parkway Bridge and the traffic circle, an extensive series of roadway directional guide signing, pavement channelization and striping, pedestrian channelization, and other physical improvements would be installed to facilitate movements into and out of the area. In addition, traffic control agents would be deployed at critical roadway areas to further improve traffic flow, control illegal or unsafe maneuvers, and enforce posted traffic regulations.

As mentioned above, to further reduce the potential traffic burden in the area, diversion away from auto usage to either express/charter bus or ferry modes would be extensively promoted and programmed as part of some ticket purchases. Additionally, Floyd Bennett Field (FBF) would be used as satellite parking on days when excessive vehicular demands to Riis Park are expected to occur. As part of this strategy, variable message signs (VMS) would be situated along southbound Flatbush Avenue to advise approaching motorists of traffic congestion ahead (should it occur) and of available satellite parking and shuttle bus/ferry connections from FBF to Riis Park. Exclusive double left-turn lanes would be included within the median of Flatbush Avenue to facilitate movements to FBF.

Regionally, directional signage would be placed along the Belt Parkway with trail blazer panels further away alerting the motorist of the general direction of Riis Park. Ferry pick-up points would be logically located where ample parking and ease of access exists (for example, at Caesar's Bay Bazaar in Bensonhurst).

Conclusion

The analyses conducted assumed substantial increases in annual beach attendance (close to 75 percent) due to refurbishment of the area, plus full attendance traffic to the proposed water park and amphitheater -- a worst-case set of assumptions. Given these assumptions, on the busiest weekends of the peak summer seasons, the Riis Park development and related traffic service would operate acceptably given that FBF diversion strategies can attract between 20 to 30 percent of general Park-bound arrivals, ferry and express/charter bus service can attract significant ridership (about 50 and 35 percent of all peak summer Sunday water park and amphitheater attendees), and traffic engineering improvement measures are implemented. Levels of traffic operations would deteriorate to congestion conditions if the above strategies are not successfully implemented.

TABLE OF CONTENTS

Page

I. INTRODUCTION 1

II. ASSESMENT OF EXISTING CONDITIONS 3

- A. Street Network 3
- B. Riis Park Parking Fields 12

III. FUTURE NO BUILD CONDITIONS 14

- A. No Build Traffic Conditions 14

IV. PROBABLE IMPACTS OF THE PROJECT 16

- A. Trip Generation 16
- B. Vehicular Trip Assignment 22
- C. Future Traffic Impact Assessment 25

V. PROBLEM IDENTIFICATION AND MITIGATION MEASURES 30

VI. CONCLUSIONS 35

VII. APPENDIX 37

LIST OF FIGURES

		Following Page
1.	1987 Existing Traffic Volumes	7
2.	1987 Existing AM Travel Conditions	11
3.	1987 Existing PM Travel Conditions	11
4.	1989 Future No Build Traffic Volumes	15
5.	1989 Future No Build AM Travel Conditions	15
6.	1989 Future No Build PM Travel Conditions	15
7.	1989 Future Build Traffic Volumes	29
8.	1989 Future Build AM Travel Conditions	29
9.	1989 Future Build PM Travel Conditions	29

LIST OF TABLES

		Page
1.	Trip Generation Parameters: Water Park	19
2.	Trip Generation Parameters: Amphitheater	21
3.	Concert Arrival Pattern	22
4.	Geographic Distribution of Trip Making Activities	23
5.	Geographic Distribution of Trips Generated	24

I. INTRODUCTION

Jacob Riis Park is situated in the central portion of Rockaway Peninsula, south of Rockaway Inlet, and directly adjacent to the Marine Parkway Bridge. The park itself is considered to be fairly convenient to the motorist with several roadways leading from the eastern portions of the peninsula and direct assess from the Belt Parkway via Flatbush Avenue and further east at Cross Bay Boulevard, although Flatbush Avenue serves as the main corridor of access to Riis Park. Traffic volumes leading to the park are generally high during summer weekends particularly during the peak morning inbound (10 AM-12 PM) and evening outbound (3-5 PM) periods. Surface transit is fairly extensive, with several bus lines extending into areas of western and northern Brooklyn and eastern Queens. Pedestrian activities between the beach and parking areas are intense.

The primary objective of the Riis Park Traffic Study is to assess the ability of the roads and facilities serving the park to accommodate additional development including water park and amphitheater components. The overall study is comprised in two parts. Within the Phase One Preliminary Investigation, previously submitted in July 1987, existing traffic conditions were qualitatively assessed with an early projection of potential roadway deficiencies. The Phase Two Impact Assessment presented here is a more detailed assessment of the traffic impacts and an outline of traffic improvements required to mitigate potential adverse conditions.

The overall procedure for assessing project-related traffic and transportation impacts follows a series of prescribed steps. The first of these is to assess existing baseline conditions, i.e., the situation today in 1987. Existing volumes were counted, circulation patterns were observed, and traffic, parking, and pedestrian conditions were evaluated.

The second major step is to establish the future conditions upon which the project will be superimposed. This is referred to as the No Build scenario and it pertains to the year when the project would be completed and opened. For the Riis Park development, this is expected to be 1989. The No Build condition includes an extrapolation of existing traffic conditions two years into the future, including increases in beach attendance attributable to refurbishment of the park area, as well as incorporating the trips generated by other projects, if any, anticipated to be built in the general area prior to the completion of the proposed project.

The last major step in the analysis is to add the trips generated by the proposed Riis Park project itself to the study area network in order to establish future Build conditions. This requires a calculation of the trips generated by the projects during the critical analysis hours and their assignment to specific travel modes and, subsequently, to specific roadways. To the extent that significant adverse impacts are created, mitigating measures must be examined.

The study area for the traffic and transportation impact assessments consisted of the roads immediately surrounding Riis Park itself, including Beach Channel Drive, Rockaway Beach Boulevard traffic circle, and the park access roads; the Marine Parkway and Cross Bay Bridges; Flatbush Avenue; Cross Bay Boulevard; and, to the points of access, the Belt Parkway.

II. ASSESSMENT OF EXISTING CONDITIONS

A. Street Network

1. Physical Description

The primary roadway system leading to and from Riis Park is direct. Flatbush Avenue and Cross Bay Boulevard provide north/south access to Rockaway Peninsula with toll crossings over Rockaway Inlet and Broad Channel, respectively. Each of these arterials have full access to the Belt Parkway in each direction as well as continuing further into the central portions of Brooklyn and Queens. Traffic using Cross Bay Boulevard to the Cross Bay Bridge must then use one of several east-west streets to access Riis Park, with Beach Channel Drive being most direct off the bridge. Access via Flatbush Avenue and the Marine Parkway Bridge is more direct.

Access into the beach parking area is funneled into a single toll plaza located slightly west of the Rockaway Beach Boulevard traffic circle. The plaza itself generally operates a maximum of four toll booths, although a total of six booths exist. Movements approaching the plaza can be problematic when demand is significant from several origins. The Marine Parkway Bridge has variable-direction lanes, with additional lanes provided for peak inbound or outbound vehicular flows, while the Cross Bay Boulevard Bridge has three lanes (unvariable) in each direction separated by a raised median. A brief description of the major roadways in the area is presented below:

Flatbush Avenue:

Flatbush Avenue is the primary route to Riis Park from Brooklyn, portions of Queens, and secondary attraction areas such as Manhattan and Staten Island. The section of concern between the Belt Parkway and Rockaway Inlet is comprised of three travel lanes in each direction with curbside parking prohibited. There are no residential land uses and only two commercial (recreational) establishments located along this roadway section -- the Barren Island Marina and the Gateway Golf/Tennis Range -- which do not generate many vehicular trips. Direct access to the Belt Parkway is provided in each direction through a full cloverleaf interchange about two miles north of Rockaway Inlet. The major movement control is the Marine Parkway Bridge toll. The toll plaza regularly services six or seven approach lanes for peak-direction traffic with a mix of manual and machine booths provided for motorists. Only three intersections south of the Belt Parkway are traffic signal-controlled, although they require actuation by the minor driveway flows to interrupt Flatbush Avenue operations.

Marine Parkway Bridge:

The bridge's toll plaza is located at the northern end of the facility and has ten lanes available to service vehicles. Peak-direction traffic is usually provided with six or seven lanes, while non-peak travelers are served by two or three lanes. The midspan section has a total of four variable-direction lanes, three of which are, at times, provided for peak-direction traffic (i.e., Park-bound during the morning, Brooklyn-bound during the afternoon). The bridge's southern section is usually controlled with traffic cone channelization, although operations are frequently hindered when vehicles merge together and, in doing so, knock these cones over. This area is usually subject to occasional vehicular congestion as several ramps either merge onto the bridge or diverge to various parts of Rockaway.

Cross Bay Boulevard:

Cross Bay Boulevard provides direct access to the public beaches of Rockaway for those destined from southern and central Queens, eastern Brooklyn, and nearby Nassau County. Between the Belt Parkway and Broad Channel, the corridor consists of two to three travel lanes and curbside parking in each direction in certain commercial and residential areas. Generally, the roadway lanes narrow approaching the Cross Bay Bridge. (The toll plaza operates similarly to that on the Marine Parkway Bridge, with six or seven approach lanes provided for peak-direction traffic flows.) Traffic signals are in-place throughout the corridor at major intersections and tend to be interruptive to Cross Bay Boulevard traffic operations.

Other significant traffic-carrying streets in the immediate area include: Rockaway Beach Boulevard, a two-directional roadway which typically encompasses two travel lanes in each direction and a landscaped median of about 13 feet in width within Neponsit and Belle Harbor; Beach Channel Drive, which is 33 feet wide in each direction adjacent to Riis Park with a wide grassy median; and Rockaway Point Boulevard, a 70 to 75-foot wide roadway which serves Breezy Point with two travel lanes in each direction in the area of Riis Park.

2. Traffic Operations

The primary travel corridors of concern are those used most directly and intensively for beach-related (and future project-associated) traffic. These include Flatbush Avenue, Rockaway Beach Boulevard, and, to a lesser extent, Cross Bay Boulevard. Other key areas of concern include: The Marine Parkway and Cross Bay Bridge toll plazas and the Riis Park parking field toll area, each of which serve to meter inbound and outbound vehicular movments; the Rockaway Beach Boulevard traffic circle, frequently the focal point of weaving vehicles and confused motorists; and the Marine Parkway Bridge south end ramp area, which represents a transition, or changes of lane configuration, between bridge and park roadways.

To document existing traffic conditions, the most recently recorded traffic counts were obtained from the New York City Department of Transportation and, although most were several years old, there is clear indication of inbound and outbound peaking activities. These counts were supplemented by strategic observations and limited manual traffic counts at the Marine Parkway Bridge south end area and the Riis Park parking field toll booth area during a typical weekend in July, 1987. A single Automatic Traffic Recorder (ATR) machine count was obtained for the extension of Beach Channel Drive north of Riis Park to serve as an indicator of traffic volume levels and peaking characteristics. A more comprehensive traffic count and monitoring program was undertaken in August, 1987 to complete the database. These counts were taken on Sundays that represented two of the busiest traffic days of the summer as determined by Riis Park parking area vehicle accumulations. ATR machines were placed along Flatbush Avenue and at various points in the Beach

Channel Drive/Riis Park access road ramp/interchange area. Manual traffic counts were obtained on all the roads leading to Riis Park as well as along the park access roads themselves. Additionally, the Rockaway Beach Boulevard traffic circle was closely monitored throughout the count period as it represents the transition point between local and beach-oriented traffic.

These surveys and data indicate that the peak inbound and outbound recreational travel hours generally occur on Sundays during the 10:45-11:45 AM and 4:00-5:00 PM periods, respectively. The 6:30-7:30 PM hour represents the critical period for analyzing arrival amphitheater trips (together with some beach/water park outbound traffic).

During the morning peak inbound hour, traffic flows are oriented southward toward the Rockaway beaches, with Riis Park visitors primarily using Flatbush Avenue to the Marine Parkway Bridge to get to the Park. South of the Belt Parkway to the Marine Parkway Bridge toll, southbound Flatbush Avenue carries between 3,400 and 3,600 vehicles per hour (VPH), with vehicular queueing extending north of the toll plaza for about a 3/4-mile distance. The Belt Parkway interchange at Flatbush Avenue processes traffic at a brisk, slightly intense level of operations, with no delays or queues observed during the morning peak periods. Aproaching the parking field's toll area, some 1,500 to 1,750 VPH are carried along the park's access roadways. Some queueing and delays, significant at times, are experienced by the approaching motorist in this area primarily due to the unbalanced travel lane demand (most vehicles ride the inside curb lane toward the toll gate), unchanneled pedestrians who cross between vehicles, drop-off activities, and unused toll booth processing abilities. Although no vehicular counts were made along Cross Bay Boulevard, queueing (i.e., bumper-to-bumper traffic) was observed from north of the Belt Parkway consistently to the Cross Bay Bridge toll plaza on the survey days. Sporadic queueing was also observed on the Belt Parkway westbound off-ramp loop. These observations indicated that little or no excess travel capacity existed along this corridor during the morning inbound peak period. Rockaway Beach Boulevard carries light traffic, between 250 and 390 VPH, during this period with the higher volumes oriented westward toward the park area. Traffic volumes along Beach Channel Drive adjacent to Riis Park -- between 2,400 and 2,600 VPH eastbound and about 800 VPH westbound -- are the highest in the study area as it represents a conduit to many of the Rockaway beaches. Eastbound volumes decrease to about 1,000 to 1,100 VPH approaching Cronston Avenue in Neponsit. Traffic destined to Breezy Point travels westward along Rockaway Point Boulevard and is moderately high -- about 1,400 to 1,500 VPH -- although easily accommodated within this area. Figure 1 illustrates morning peak period vehicular volumes, listed as vehicles per hour, or VPH.

During the 6:30-7:30 PM peak outbound hour, traffic flows are directed toward the Cross Bay and Marine Parkway Bridges, with Riis Park and Breezy Point users primarily attracted to the latter of these bridge facilities. As with the morning condition, the late afternoon outbound flows experience significant travel delays in the area immediately east of the parking toll area, particularly when exiting vehicles neck down from four to three travel lanes and near the traffic circle as double parking activities usurp additional roadway travel space. About 1,000 VPH are carried through this general area, with about 80 percent destined toward Beach Channel Drive and the Marine Parkway Bridge and the remaining 20 percent oriented east to Rockaway Beach Boulevard. Approaching the Marine Parkway Bridge, significant delays onto the bridge occasionally occur as the two-lane Breezy Point loop ramp merges with the three-lane extension of Beach Channel Drive into a total of four travel lanes. Slightly north of this merge point, the roadway narrows again to two or three lanes at the bridge's midspan, depending on prevailing roadway conditions (the bridge is generally configured to carry three Brooklyn-bound lanes and one beach-bound lane in this time period). The Breezy Point loop ramp carries about 600 VPH during this peak period, while the extension of Beach Channel Drive processes between 600 and 1,500 VPH to this location, with the latter higher volumes in the area directly north of the Riis Park parking fields. The Marine Parkway toll area is generally channelized properly for Brooklyn-bound vehicles with no extensive queueing observed -- primarily due to the metering effect of the aforementioned merge constriction. Once processed through the toll plaza, motorists experience some delays and congestion about a mile south of the Belt Parkway interchange, although this traffic intensity is generally maintained for only a relatively short evening period. This condition continues north of the parkway. Some significant vehicular weaving was evident at the interchange as motorists vie for position when either traveling onto or off of the parkway. A similar travel condition was observed along Cross Bay Boulevard north of its bridge

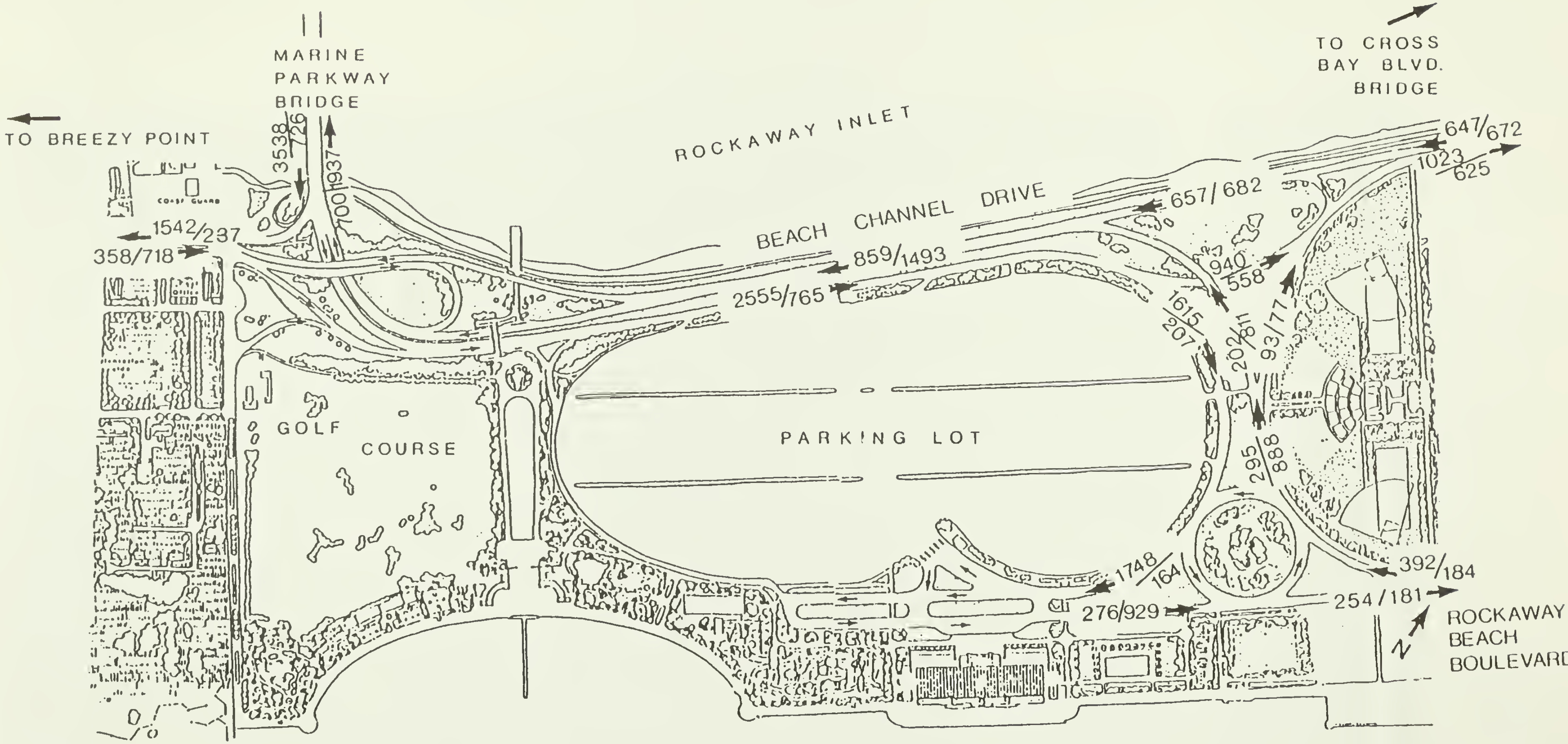


Figure 1
1987 Existing Traffic Volumes
(Summer Sunday)

Riis Park Traffic Study

KEY: x/x – PEAK AM/PM TRAFFIC (VPH)

toll plaza, although queueing and delays were much more intense due to the roadside presence of parked vehicles, commercial establishments, and traffic signal interruptions. Figure 1 illustrates evening peak period vehicular volumes.

3. Street Capacities

The capacity of urban streets and arterials is typically controlled by the capacity at its intersections with other streets or, in the case of major highways and other limited access facilities, by the prevailing roadway conditions and traffic compositions. Whether at an intersection or along a major highway each of these capacities, i.e., the maximum number of vehicles that can pass through it, depends on several factors.

The methodology used for computing capacities within the primary impact area is based on 1985 Highway Capacity Manual* procedures, the current standard for analyzing roadway systems. Intersection capacity, under HCM procedures, is dependent on several factors including the number of lanes and lane widths, parking conditions, vehicle mix, bus stop locations and the frequency of local bus service, left turn and right turn percentages, type of intersection control and signal phasing and timing, and the intensity of traffic demand within the peak hour itself (i.e., peak hour factor). For multilane highways and arterials such as the Marine Parkway Bridge and Beach Channel Drive, roadway travel capacities are dependent on the number of lanes and lane widths, the presence of truck and recreational vehicles, the general traffic stream characteristics (i.e., commuter, weekend, recreational, mid-day types), and driving environment (i.e., divided or undivided roadway in a rural, suburban, or urban setting). It should be noted that these factors determining capacity vary over the course of a day so that the capacity of a certain roadway or intersection approach may change on an hour-by-hour basis.

4. Levels of Service

Level-of-service denotes the overall operating conditions confronting the motorist, and encompasses traffic stream densities, flow interruptions, and travel speed, amongst several factors. Level-of-service is usually measured in terms of volume-to-capacity (v/c) ratios or, in the case of intersections, delay levels -- the measure of driver discomfort, frustration, fuel consumption, and lost travel time.

---

*Transportation Research Board Special Report 209, Highway Capacity Manual.

According to the 1985 Highway Capacity Manual, the conditions which the driver is likely to encounter at each level-of-service for signalized intersections are as follows:

- Level-of-service A describes operations with very low delay, i.e., less than 5.0 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.

- Level-of-service B describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.

- Level-of-service C describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

- Level-of-service D describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.

- Level-of-service E describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios.

- Level-of-service F describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

For multilane highways and arterials, the 1985 HCM details the following travel conditions at each level-of-service:

- Level-of-service A describes completely free-flow conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway and driver preferences. The ability to maneuver within the traffic stream is high.

- Level-of-service B is also indicative of free flow, although the presence of other vehicles begins to be noticeable. Average travel speeds are somewhat diminished from LOS A, but are still generally over 53 mph on sections with 70-mph design speed.

- Level-of-service C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream, and to select an operating speed, is now clearly affected by the presence of other vehicles. Average travel speeds are reduced to about 50 mph. Minor disruptions may be expected to cause serious local deterioration in service, and queues may form behind any significant traffic disruption.

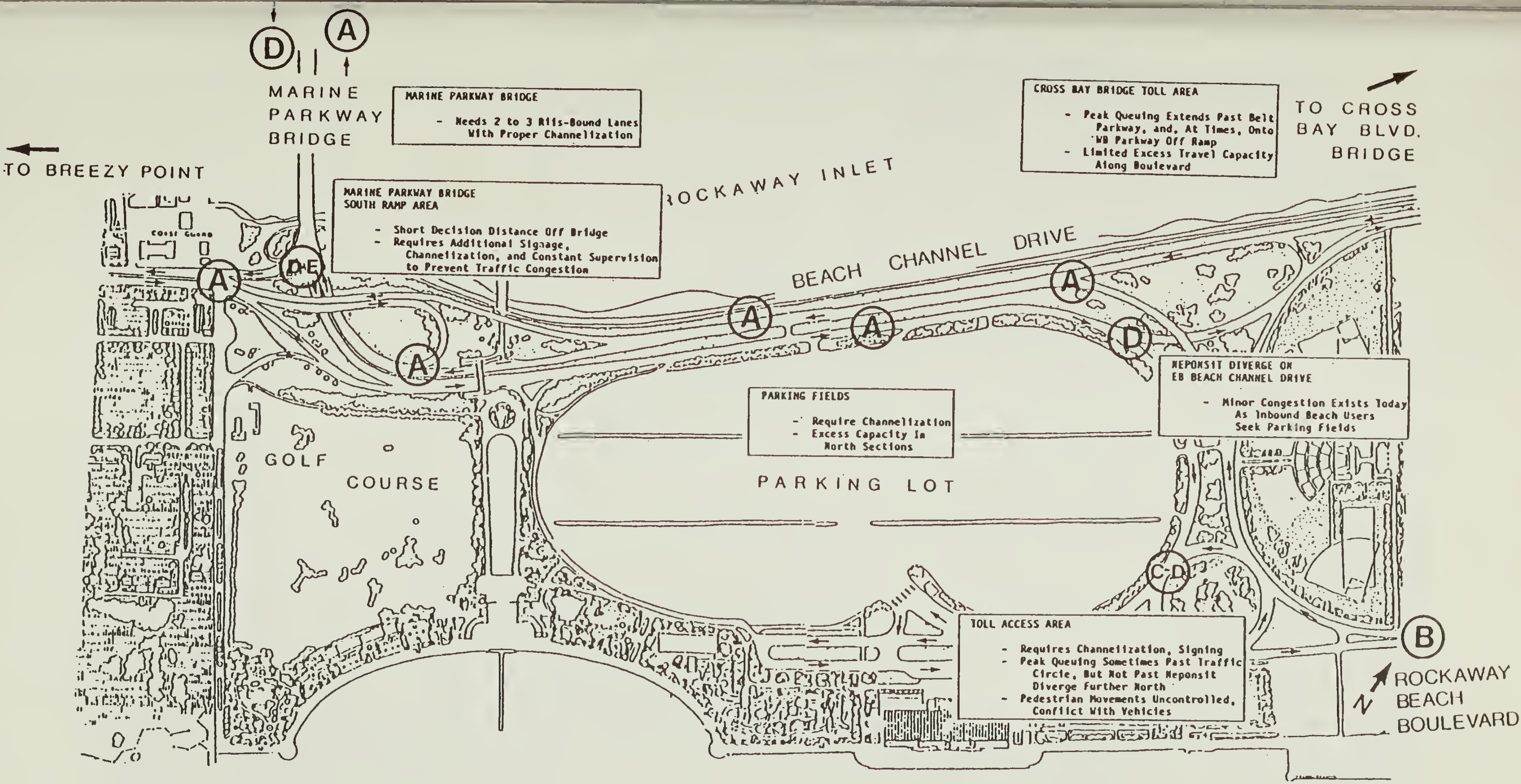
- Level-of-service D borders on unstable flow. Speeds and ability to maneuver are severely restricted because of traffic congestion. Average travel speeds are approximately 40 mph. Only the most minor of disruptions can be absorbed without the formation of extensive queues.

- Level-of-service E represents operations at or near capacity, is quite unstable, and effectively defines a traffic stream with no usable gaps. Thus, disruptions cannot be damped or dissipated, and any disruption, no matter how minor, will cause queues to form and service to deteriorate to LOS F. Average travel speeds at capacity are approximately 30 mph.

- Level-of-service F represents forced or breakdown flow. It occurs at a point where vehicles arrive either at a rate greater than that at which they are discharged or at a point on a planned facility where forecasted demand exceeds the computed capacity. While operations at such points (and on immediately downstream sections) will appear to be at capacity or better, queues will form behind these breakdowns. Operations within queues are highly unstable, with vehicles expriencing short spurts of movement followed by stoppages. Average travel speeds within queues are generally under 30 mph.

For existing conditions, levels-of-service are presented for each key roadway section and link in Figures 2 and 3 for the Summer Sunday AM and PM peak hours, respectively. Described below are operating conditions along the major arterials in the study area.

- Flatbush Avenue, south of the Belt Parkway, operates at acceptable levels-of-service in the peak direction during peak travel hours (LOS C in the AM southbound; LOS A in the PM northbound), but is occasionally adversely influenced by traffic congestion at the Marine Parkway Bridge and the Belt Parkway. These delays are, for the most part, intermittent and do not significantly inhibit the



MARINE PARKWAY BRIDGE

- Needs 2 to 3 Riis-Bound Lanes With Proper Channelization

MARINE PARKWAY BRIDGE SOUTH RAMP AREA

- Short Decision Distance Off Bridge
- Requires Additional Signage, Channelization, and Constant Supervision to Prevent Traffic Congestion

CROSS BAY BRIDGE TOLL AREA

- Peak Queuing Extends Past Belt Parkway, and, At Times, Onto WB Parkway Off Ramp
- Limited Excess Travel Capacity Along Boulevard

PARKING FIELDS

- Require Channelization
- Excess Capacity In North Sections

NEPONSIT DIVERGE ON EB BEACH CHANNEL DRIVE

- Minor Congestion Exists Today As Inbound Beach Users Seek Parking Fields

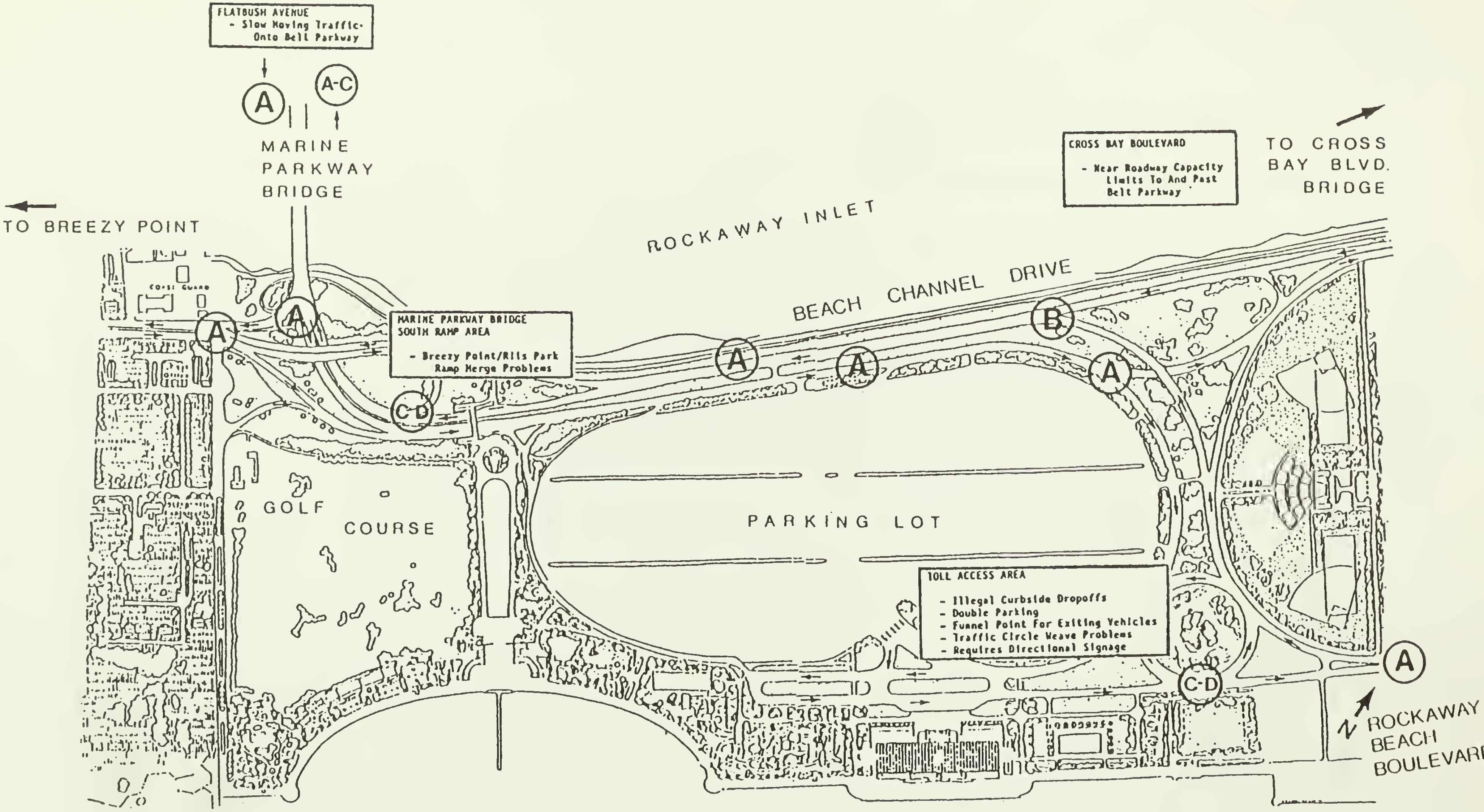
TOLL ACCESS AREA

- Requires Channelization, Signing
- Peak Queuing Sometimes Past Traffic Circle, But Not Past Neposit Diverge Further North
- Pedestrian Movements Uncontrolled, Conflict With Vehicles

KEY: → - TRAFFIC DIRECTION
○ - TRAFFIC LEVEL-OF-SERVICE

Figure 2
1987 Existing AM Travel Conditions
(Summer Sunday)

Riis Park Traffic Study



FLATBUSH AVENUE
- Slow Moving Traffic Onto Belt Parkway

MARINE PARKWAY BRIDGE SOUTH RAMP AREA
- Breezy Point/Riis Park Ramp Merge Problems

CROSS BAY BOULEVARD
- Near Roadway Capacity Limits To And Past Belt Parkway

TOLL ACCESS AREA
- Illegal Curbside Dropoffs
- Double Parking
- Funnel Point For Exiting Vehicles
- Traffic Circle Weave Problems
- Requires Directional Signage

Figure 3
1987 Existing PM Travel Conditions (Summer Sunday)

Riis Park Traffic Study

KEY: → - TRAFFIC DIRECTION

overall traffic operations along the corridor's main travel section in between.

- Marine Parkway Bridge's southern section is usually subject to vehicular congestion -- levels-of-service D to E -- as several ramps either merge onto the bridge or diverge to various parts of Rockaway. These problems are heightened by the lack of proper traffic controls and direction. However, for the most part, this congestion is short term (i.e., a few concentrated periods during each peak traffic period) and, as such, is considered tolerable. The bridge's mainspan typically operates at levels-of-service A to C in either direction throughout most periods of the day, although traffic flow across the span is sometimes inhibited by the narrow lane geometry and absence of adequate shoulder space (level-of-service D operations prevail during the morning inbound peak hour).

- Beach Channel Drive operates at acceptable levels-of-service throughout the day (LOS A) with occasional delays experienced in the westbound direction when the Marine Parkway Bridge northbound merge is very concentrated. Volumes carried through this main section are high but easily accommodated by the street's mainline capacity.

- Rockaway Beach Boulevard traffic typically operates at acceptable levels-of-service (LOS A to B) throughout the day, with a slight peaking coincident with peak inbound or outbound periods. Volumes are expectedly low as the street's main function is one of local access rather than regional distribution.

B. Riis Park Parking Fields

The lot is owned by the National Park Service and operated under the management of Edison Parking. The facility has licensed capacity for 9,370 cars, although peak accumulation figures at any particular time of the day are generally well under this total. On weekends, it is open to the public from 6:00 AM to 10:00 PM. The plaza has existing capacity of six toll booths, although during peak inbound demand periods a maximum of only four booths were observed to be in operation. This could partially explain the occasional intense vehicular queueing on the access roads leading to the parking fields. The rear (i.e., northern) sections of the lot, referred to by management as Areas C and F, are rarely used to capacity as these lie furthest from the beachfront areas. However, usage of the remaining closest four sections (Areas A, B, D, E) frequently approach capacity shortly after 12:00 PM and remain so until around 2:30 PM when the early beach visitors begin to leave the park. Overall, the lot reaches a peak accumulation of between 60 to 75 percent full, generally during the 2-3 PM hour, before the major outbound flows occur. Internal control of vehicles is generally poor as vehicles meander through collector parking aisles in all directions in an effort to find the quickest path to the central lot roadway and main egress area. Traffic approaching this central roadway moves slowly as many vehicles rival for outbound position. Vehicle control is made less efficient due to lack of internal traffic control agents and faded, almost non-existent, pavement markings.

III. FUTURE NO BUILD CONDITIONS

In order to determine the impacts of the proposed project, a description of the traffic conditions in the future without the development (i.e., future No Build Conditions) must be developed first. The future year condition examined in this section assumes the project site remains as it is today with other growth in the area going forward.

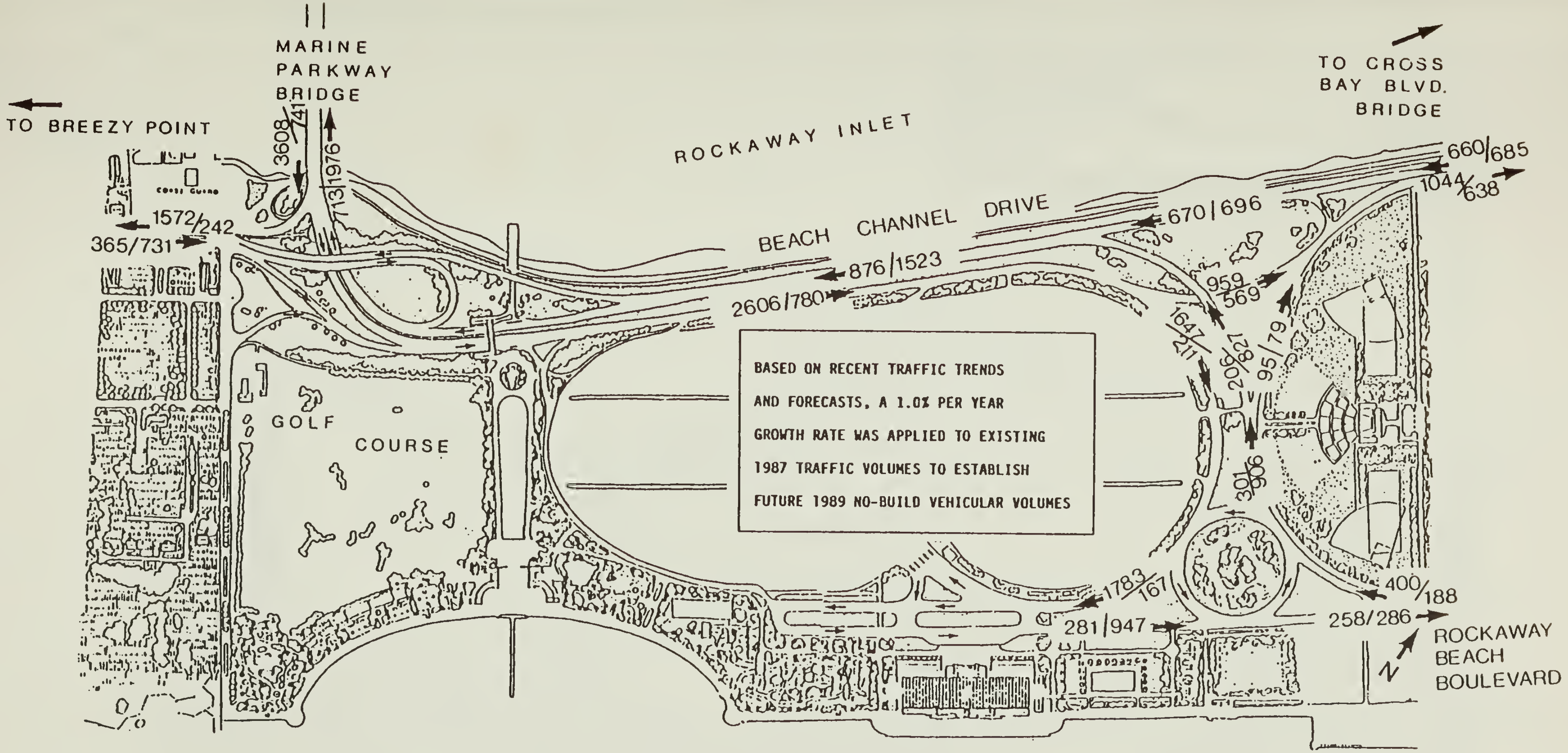
A. No Build Traffic Conditions

In establishing expected future traffic volumes, a background traffic growth factor is superimposed on existing traffic volumes along with vehicular tripmaking associated with specific development projects, if any, expected to be in-place by the analysis years.

Within the last ten years or so, vehicular traffic volumes over the Marine Parkway Bridge have grown slightly during the weekend periods (although the reverse -- a decline -- is true during the midweek days) reflecting the increased use of the Rockaway Beach areas. This growth falls within the 1.0 to 1.25 percent per year range, which is fairly close to the figure of 0.75 annual percent increase forecast in the mid-1970s by the New York City Department of City Planning. However, according to Gateway National Recreation Area officials and records, attendance figures in the 1980s for Riis Park have been steadily declining for a variety of reasons including: 1) enforcement of the ban on nude sunbathing enacted by the City in the early 1980s, and 2) the general decline in the physical condition of the beachfront facilities. Despite this recent decline in Riis Park attendance, background traffic growth associated within the western portion of the Rockaway peninsula is conservatively accounted for through the use of a 1.0 percent per year growth factor.

Vehicular trips associated with additional development projects are considered to be very minor through this area, particularly during this non-commuter weekend period, as programmed changes are either further east (toward the Nassau County line) or north (above the Belt Parkway). Additionally, any suggested Floyd Bennett Field development is highly tentative and not expected to be on-line for or even programmed by 1989. Thus, no traffic increase attributable to any specific development is included in this analysis.

Overall, there are expected to be no appreciable increases in traffic volumes and no level-of-service degradations on the major roadways leading to and from the Riis Park beach area. Figures 4 through 6 depict the 1989 future No Build vehicular volumes and travel conditions for the AM and PM peak travel periods.

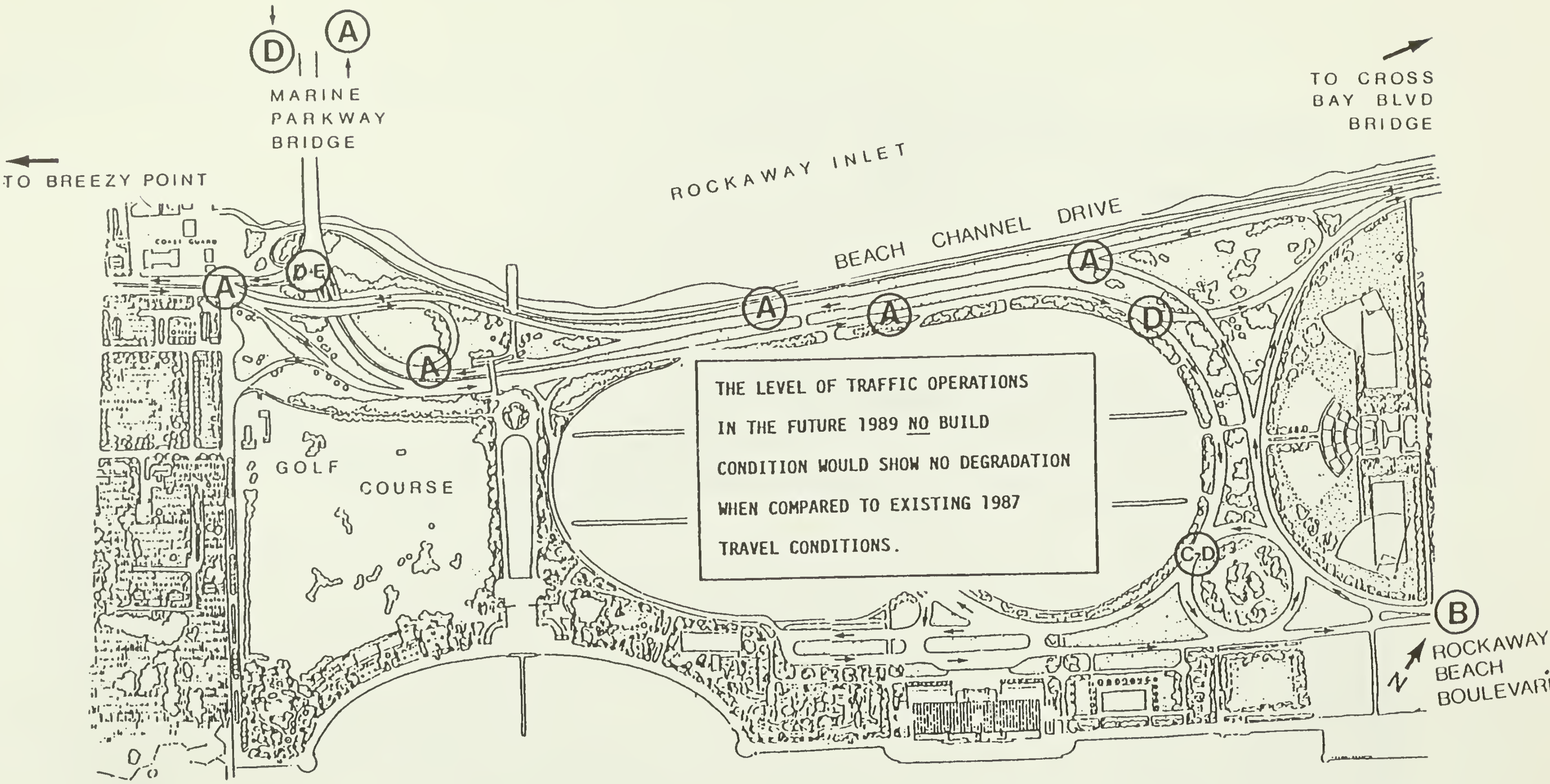


BASED ON RECENT TRAFFIC TRENDS AND FORECASTS, A 1.0% PER YEAR GROWTH RATE WAS APPLIED TO EXISTING 1987 TRAFFIC VOLUMES TO ESTABLISH FUTURE 1989 NO-BUILD VEHICULAR VOLUMES

KEY: x/x – PEAK AM/PM TRAFFIC (VPH)

Figure 4
1989 Future No-Build Traffic Volumes
(Summer Sunday)

Riis Park Traffic Study

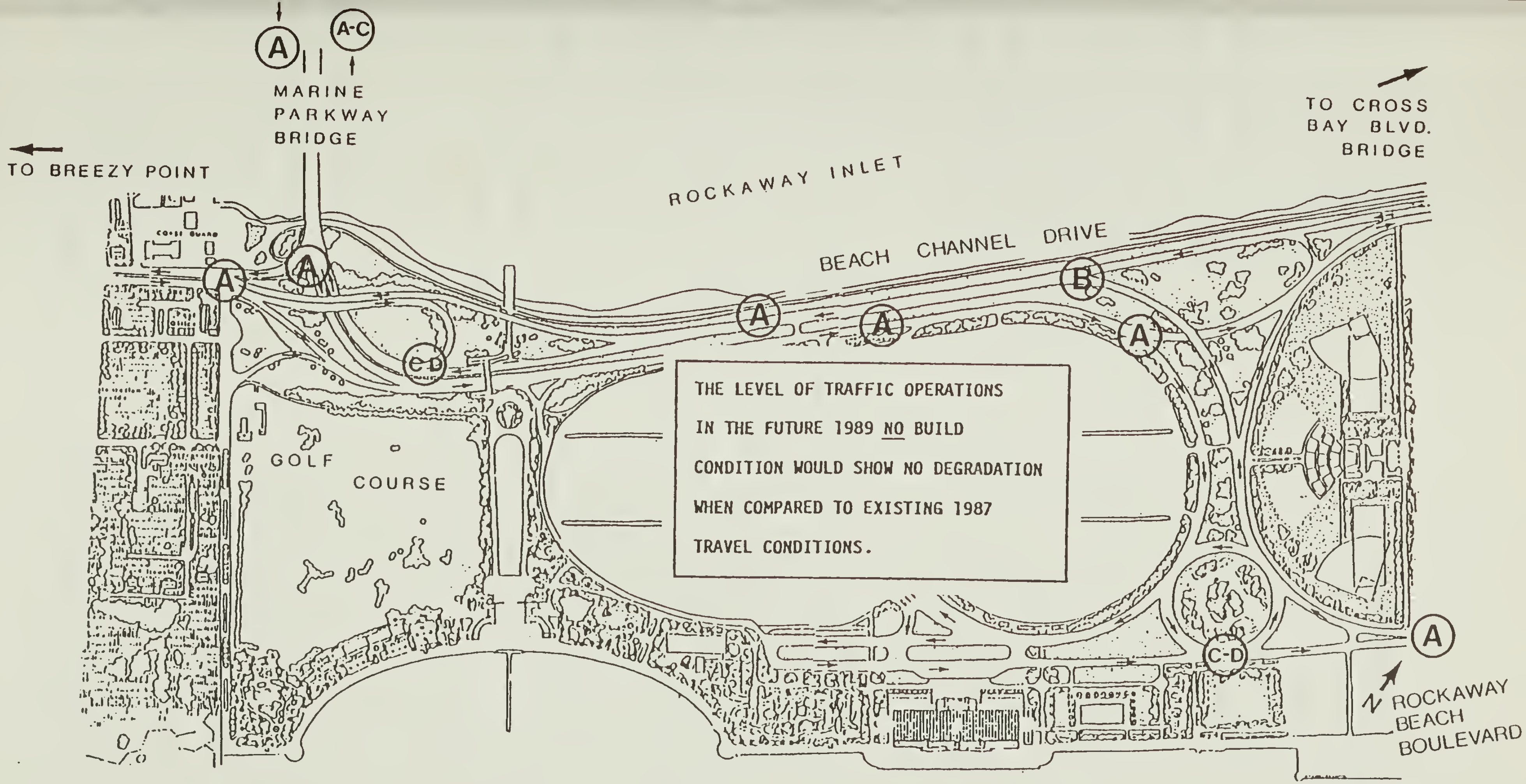


THE LEVEL OF TRAFFIC OPERATIONS IN THE FUTURE 1989 NO BUILD CONDITION WOULD SHOW NO DEGRADATION WHEN COMPARED TO EXISTING 1987 TRAVEL CONDITIONS.

Figure 5
1989 Future No-Build AM Travel Conditions (Summer Sunday)

Riis Park Traffic Study

KEY: → - TRAFFIC DIRECTION
○ - TRAFFIC LEVEL-OF-SERVICE



THE LEVEL OF TRAFFIC OPERATIONS IN THE FUTURE 1989 NO BUILD CONDITION WOULD SHOW NO DEGRADATION WHEN COMPARED TO EXISTING 1987 TRAVEL CONDITIONS.

KEY: → - TRAFFIC DIRECTION
O - TRAFFIC LEVEL-OF-SERVICE

Figure 6
1989 Future No-Build PM Travel Conditions (Summer Sunday)

Riis Park Traffic Study

IV. PROBABLE IMPACTS OF THE PROJECT

A. Trip Generation

Each proposed development component for Riis Park (i.e., water park, amphitheater) will generate a certain number of trips each day, with each having its own particular characteristics. These include the rate at which it generates trips, the distribution of trips throughout the day, and the means of transportation used for the trips. Trip generation characteristics used in the analysis that follow were based on market studies completed on behalf of the developer, local surveys and data sources, accepted standard references, discussions with National Park Service officials as to future Riis Park attendance trends, and other studies.

The trip generation estimates for the development were derived first as total daily or event trips by all travelers and then broken down by travel direction by time of day. For example, during the morning analysis period, the water park component would have a significantly higher inward flow of trips. Next, peak hour trips are estimated for the auto travel mode. Finally, trips by auto are translated into estimated vehicle trips based on vehicle occupancy rates. This final estimate of vehicle trips is then geographically distributed onto likely arrival/departure paths traversing the study area roadways -- in particular, Flatbush Avenue, Cross Bay Boulevard, the Belt Parkway, and Rockaway Beach Boulevard. In this fashion, an assessment of project-related trips and prevailing roadway conditions can be made on a roadway-by-roadway basis for a variety of time periods.

Discussions with National Park Service and the developers of the site reveal that an extensive transit and transportation promotional campaign would be aimed at the target user group of this facility. Increased surface transit would be one key element of this program. It would involve stepped-up mass transit service (additional service of about four buses per peak weekend hour has been preliminarily discussed with and planned by NYCTA) and the introduction of extensive charter/express bus line-haul operations by the developer (a fleet size of some fifty 40-seat buses would be implemented from various Brooklyn and Queens schedule pick-up points). Regional ferry service is also planned by the developer as an integral part of the overall "experience" aspect of traveling to and from the site. The service would have its origin in lower Manhattan and have several pick-up points in Brooklyn (65th Street, Caesar's Bay Bazaar area, and Sheepshead Bay are tentative berthing sites) before docking in Rockaway Inlet at Riis Park just east of the Marine Parkway Bridge. A fleet of large (four boats at 750 seats each) and medium (three boats at 149 seats each) size vessels would be available. (The analysis assumes 85 and 90 percent vessel occupancy rates for amphitheater and water park regional ferry trip activities, respectively.) Additionally, to ensure these modes' use, some water park and amphitheater tickets would have these transportation services included as part of the ticket purchase price structure. As shown in Tables 1 and 2, about 5,000 ferry/express bus users are included in the analyses based on the above available vessel and vehicle fleets size.

1. Beach Facility Rehabilitation

With the beach front facilities and structures programmed for rehabilitation and improvement as part of this proposed development, an increase in Riis Park attendance is likely to be induced. National Park Service (NPS) officials have optimistically estimated that peak May-September visitation could rise from the existing 170-200,000 auto arrivals to as high as 300,000 -- consistent with but remaining below their peak early 1980s figures. Factors preventing this area from ever regaining its maximum beach-only related attendance include: 1) the continued ban on nude sunbathing, and 2) a modified, now-established recreational trip pattern away from a once deteriorated Riis Park to other more attractive beach communities.

NPS projections do represent a sizable and conservative increase of about 50 percent over existing summer season figures. However, this does not infer that future peak hour traffic levels will rise by this projection. Rather, it is likely that daily traffic levels will rise (throughout the day), while peak period traffic levels will generally increase to and then be restrained by roadway capacity limits.

Using on-record traffic counts collected by the New York City Department of Transportation during July 1980[a] (the observed peak Riis Park attendance year in the previous decade), peak hour traffic relationships were established for the analysis periods presented in this document.

The 1980 Sunday morning peak hour count (about 3,200 vph) is actually less than the recent 1987 count (between 3,500 and 3,600 vph), although the level of vehicular volume intensity was sustained for a longer time period in 1980 than was observed last summer. The 1980 Sunday late afternoon/early evening count was about 25 to 30 percent higher in 1980 as compared to 1987 counts. For this Phase Two analysis, the morning 1987 volumes were slightly -- and conservatively -- raised (a 10 percent increase) despite an observed decrease in this period, while the 1987 afternoon volumes were increased by about 25 percent to reflect the above-mentioned differences.

2. Water Park

The most important complementary attraction to the proposed water park is the Jacob Riis Park ocean front area. While the beach does not provide the same visitor experience as the water park elements, there are enough similarities to allow comparison of trip making activities of each land use. Table 1 lists parameters used in the estimation of future trip generation of the water park.

Based on New York City Department of City Planning visitor surveys, the Riis Park average auto occupancy is about 3.67 persons per auto. This, in turn, translates the daily auto visitor trips (Item 6 in Table 1 below) to about 1,130 auto and 50 express/charter bus trips per day as the projected vehicle trip generation for the water park component.

Assuming that the existing arrival patterns remain consistent for the future water park visitors, about 20 percent of the attendees can be expected to arrive during the peak 10:45-11:45 AM hour, while some 10 percent of these

---

[a] These data were obtained on a weekend of clear weather (no precipitation was recorded), above-normal temperatures between 87 and 101 degrees, and low-to-average wind readings, i.e., probably very busy beachgoing days.

TABLE 1

TRIP GENERATION PARAMETERS: WATER PARK

1. Peak Daily Attendance (Average July Weekend Day) - 11,240 Visitors[a]
2. Local Bus Transit Usage to Site - 1,800 Transit Visitors[b]
   (@ 16% of peak total)
3. **Increased** Local Transit Usage to Site - 200 Transit Visitors[c]
   (@ 4 added bus runs)
4. Express/Charter Bus Usage to Site - 2,000 Transit visitors[d]
   (@50 buses per day)
5. Ferry Usage (@ a 90% vessel occupancy rate) - 3,100 Ferry Visitors
6. Visitor Trips by Auto - 4,140 Auto Visitors

---

[a] Based on Feasibility Analysis for a Proposed Water Park at Riis Park, Economic Research Associates (2-87)

[b] Based on Data Collection Report Volume 1 Gateway in the Region, N.Y.C. Dept. of City Planning (6-75)

[c] Based on four additional local transit buses

[d] Based on fleet size of fifty 40-seat charter-type buses

visitors depart during the peak 6:30-7:30 PM hour. This translates to an estimated 235 inbound vehicles during the AM analysis hour and 115 outbound auto trips occur during the evening analysis hour.

3. Amphitheater

The amphitheater seating will be arranged for 7,500 formal seats and 7,500 "blanket spaces" (sloped lawn area for attendees with blankets). The analysis assumes full attendance for both the formal seating area and blanket space -- translating to an overall maximum attendance of 15,000 people. It must be noted here that many events would not reach this maximum attendance figure; thus, trip generation presented here would not always be realized and can be considered conservative. Table 2 lists key trip generation parameter developed for the amphitheater.

In the analysis of amphitheater attendance, a mix of auto passenger group size (i.e., the number of persons arriving in one vehicle) could be expected. For example, there will naturally be a mix of single couples, double-date couples, and group and family visitors of 3 or more in one vehicle. For this analysis, the conservative assumption of a higher arrival percentage of single couples was used, thus translating to an auto occupancy of about 2.8 persons per auto. Based on this occupancy rate, it is estimated that the amphitheater will generate about 3,440 auto and 50 express/charter trips per event.

In order to determine the hourly arrival/departure pattern for these trips, a review of the Wolf Trap concert hall schedule was performed. Wolf Trap (in Fairfax County, Virginia) represents a facility currently in operation that will closely resemble the proposed amphitheater in terms of general setting and arrival activity. At Wolf Trap, between 30 and 40 percent of the event's attendees arrive at the grounds about two hours before the event start time to picnic and relax in the environment, while about 55 percent of the attendees arrive in the immediate preceding hour to participate in similar activities. Most concert events have the inevitable late arrivals. Some facilities have observed as many as 60 percent late arrivals (Madison Square Garden, for example); a much lower figure of 10 percent will be used in this analysis. It

TABLE 2

TRIP GENERATION PARAMETERS: AMPHITHEATER

1. Attendance (@ 7,500 formal seats plus 7,500 "blanket seats") - 15,000 attendees
2. Local Bus Transit Usage to Site (Assumed 2% of attendance) - 230 attendees[a]
3. **Increased** Local Transit Usage to Site (@ four added bus runs) - 200 Transit Visitors[b]
4. Express/Charter Bus Usage to Site (@ 50 buses per peak hour) - 2,000 Transit Visitors[c]
5. Ferry Usage (@ an 85% vessel occupancy rate) - 2,930 Ferry Visitors
6. Attendees Arriving by Auto - 9,640 attendees

---

a. Based on current available transit service to Riis Park
b. Based on four additional local transit buses
c. Based on fleet size of fifty 40-seat charter-type buses

must be noted that these arrival patterns would likely be consistent for a particular concert type's variety of event start times (e.g., Saturday nights, Sunday nights; 8 PM, 8:30 PM, etc.). Table 3 lists the time distribution of concert arrivals.

TABLE 3
CONCERT ARRIVAL PATTERN

Event Start Time	Percentage of Concert-Goers by Arrival Time
2 Hrs Before	35
1 Hr Before	55
1 Hr After	10

As previously described, the 6:30-7:30 PM hour represents the critical period for analyzing amphitheater trips (together with some beach/water park outbound traffic). Discussions with the developer reveal that the majority of amphitheater events would start at 8 PM or later so as to effectively reduce potential traffic problems associated with earlier start times and overlapping inbound concert/outbound water park traffic. The critical 6:30-7:30 PM period (about 1½ hours before the 8 PM start time) would then absorb approximately 45 percent of event patrons arriving to the site. This translates to approximately 1,570 inbound vehicle trips occurring during this key hour. Amphitheater departures, though concentrated, will not be assessed in this document as these vehicles will have little competition for roadway travel space or capacity during late night hours and would not be expected to experience more serious outbound traffic congestion.

B. Vehicular Trip Assignment

Project-related vehicular traffic was assigned to the study area network on the basis of the most likely routes to be taken by motorists to and from the Riis Park parking fields. Origin-and-destination patterns for project traffic were based on field reconnaissance conducted by the New York City Department of City Planning for the express purpose of determining Gateway park usage borough-by-borough and, within each borough, on a neighborhood level. Vehicles were routed to and from Riis Park on the basis of their specific neighborhood origin (on the assumption development users would exhibit similar origin dispersal) via the most logical paths available. The traffic assignments were demand-based and not constrained by prevailing travel capacity limitations -- thus traffic was not routed away from streets at or near capacity and onto other streets nearby because capacity was available there. Table 4 summarizes the geographic distribution of the tripmaking activities to and from the study area.

TABLE 4
GEOGRAPHIC DISTRIBUTION OF TRIP MAKING ACTIVITIES

Origin/Destination	Vehicle Trip Percent Distribution
Brooklyn	55.9
Queens	17.7
Manhattan	18.0
Staten Island	1.7
Bronx	2.2
New Jersey	2.8
Other	1.7
TOTAL	100%

General access/egress to the Riis Park area was assumed as follows:

- o Traffic to/from the north: Vehicles would primarily use the Flatbush Avenue/Marine Parkway Bridge corridor as the means of access to Riis Park. This would include Manhattan, Bronx, Staten Island, Brooklyn, and New Jersey origin neighborhoods. Additionally, northern Queens origins such as Astoria and Long Island City would likely travel along the Brooklyn-Queens Expressway and Belt Parkway rather than along local roads to access the Riis Park. (This would be a relatively small percentage of the total users -- about three to four percent of the total.) An estimated 85 percent of the total users would thus travel to and from Riis Park in this manner.

- Traffic to/from the east: Vehicles from nearby southern and central Queens (about 12 percent of the total users) would primarily use the Cross Bay Boulevard/Cross Bay Bridge corridor and then directly connect with Beach Channel Drive as the means of access to the Rockaway Peninsula. Local area users from nearby neighborhoods such as Neponsit, Belle Harbor or southern Rosedale (estimated at about two percent of the total) would gain access via Rockaway Beach Boulevard.

- Traffic to/from the west: Focusing on the western tip of Rockaway Peninsula, Breezy Point patronage (estimated at about one percent of the total) would primarily use Rockaway Point Boulevard to approach the Riis Park area.

Table 5 lists these geographic distributions for water park and amphitheater uses.

TABLE 5

GEOGRAPHIC DISTRIBUTION OF TRIPS GENERATED

	Trip Generation				
Land Use	TOTAL	Flatbush Ave.	Cross Bay Blvd.	Breezy Point	Local Areas to the East
Water Park In (10:45-11:45 AM)	235	201	27	3	4
Water Park Out (6:30-7:30 PM)	118	101	14	1	2
Amphitheater In (6:30-7:30 PM)	1,572	1,340	186	15	31

Table 5 above indicates an intense utilization of the Flatbush Avenue corridor, similar to current travel operations. Other arrival and departure paths would be logically less traveled since they are either circuitous or do not serve a particularly extensive development user market.

C. Future Traffic Impact Assessment

1. Floyd Bennett Field (FBF) Satellite Parking

With both development-related and beach rehabilitation-induced traffic growth anticipated for Riis Park, there may be circumstances or isolated events causing the Riis Park parking fields to approach capacity accummulations and, if so, congestion on the surrounding roadways would occur. A traffic diversion/reduction plan has been developed that seeks to minimize the volume of traffic that would approach the close-in Riis Park area, by shunting some amount of excess traffic to FBF. In order to retain tolerable traffic operations along the corridor en route to Riis Park, the traffic analysis sought to determine approximately how extensive a plan would have to be implemented and how successful it would have to be.

The amount of peak hour vehicle trips needed to be diverted to available Floyd Bennett Field satellite parking was determined by applying level-of-service D to E (volume-to-capacity ratios in the 0.80-0.90 range) threshold limit criteria to the surrounding roadway network. On the busiest weekend days at Riis Park, between 20 and 30 percent of general Riis Park-bound arrival traffic (i.e., all beach-bound arrival traffic, not necessarily development-related vehicles only) on Flatbush Avenue would have to be diverted to FBF to ensure these service operations. Traffic volumes exceeding these capacity limits represent the approximate required vehicular diversion to FBF. It is of note that this diversion amount is not unrealistic or unlikely if proper traffic control measures are implemented on the roadways leading to FBF. These measures would include variable message signing on Flatbush Avenue warning the approaching motorist of congestion at Riis Park and to divert/park at FBF, traffic control personnel supplying information and direction, and parking rate differentials at FBF designed to attract the arriving motorist away from parking at Riis Park itself. Travel congestion attributable to intense vehicular demand or overflow parking conditions can be reduced or limited, in many cases, before it occurs at Riis Park. Once parked at FBF, a shuttle bus fleet and ferry service would be two options available to beach users to transport them the short distance to and from the Riis Park beach front.

Operationally, communication lines would exist between the Riis Park parking fields, Floyd Bennett Field, and potential congestion locations in between. When, for example, parking accummulation is nearing peak levels at Riis Park, direction would be forwarded to begin vehicle diversion to Floyd Bennett Field. This would entail traffic control personnel and variable message signing (VMS) at Flatbush Avenue access points to FBF parking locales. Or, as another instance, if vehicle queuing at a particular roadway location is observed by stationed field personnel, additional congestion could be prevented by reducing travel demand along this corridor (i.e., diversion to FBF would immediately commence). Furthermore, traffic diversion to FBF could commence early before traffic overflows or congestion occurs on anticipated heavy attendance days (predetermined based on advance ticket sales).

Enclosed in the attached appendix are plan views detailing the existing areas at Floyd Bennett Field and at Riis Park that could be reserved for shuttle bus loading, unloading, and circulation activities as presented in the 1979 General Management Plan for Gateway National Recreational Area (as prepared by the National Park Service). Though more expansive than required for this proposed development, these sketches demonstrate the feasibility of such travel circulation within and between each area.

For this project, approximately 80 to 100 40-seat shuttle buses would be needed to accommodate peak period satellite parking demand. It is estimated that between 3,000 and 4,000 parking spaces would need to be reserved at FBF for shuttle bus operations. This translates to a space requirement of about 20 acres at Floyd Bennett Field to adequately accommodate these vehicles. The left turn lanes along southbound Flatbush Avenue should be signalized to prevent turning conflicts during various time periods. Additionally, each turn bay should be wide enough to allow two moving lanes, to maximize travel capacity into FBF.

There would always be a partial fleet at both FBF and at the beach front either loading or unloading. Once loaded with passengers, the bus would immediately travel to its intended destination. A round trip from FBF to Riis Park and back again to FBF could be completed in approximatley one hour (i.e., a high time estimate assuming 10-15 minutes to board at FBF, 10-15 minutes to travel to Riis Park, 10-20 minutes to unload at the beach area, and 10 minutes to return to FBF for another trip cycle). Logistically, because each passenger could be delayed by this travel time, additional necessities must be offered to the beach user to divert to FBF, such as lower parking rates at FBF, a well-maintained bus fleet, ease of loading, unloading and general access at both locations, etc.

2. Future Traffic Impact Analysis

This analysis assumes increased transit (both ferry and express/charter bus) usage through promotions and ticket price tie-ins, and vehicle diversions as necessary to the Floyd Bennett Field parking sites. The incremental traffic associated with both the water park and amphitheater components of the development would increase volumes by measurable amounts at key locations in the immediate Riis Park area if these measures were not in effect. As can be expected, the increases would be more substantial on the access roadways adjacent to the parking fields. Traffic impacts would disperse as the distance increases away from the park area.

During the 10:45-11:45 AM peak hour, the dominant vehicular flows would continue on southbound Flatbush Avenue and the Marine Parkway Bridge. Traffic volumes along southbound Flatbush Avenue above Floyd Bennett Field would increase by about 550 vehicles per hour (VPH) -- typically, 14 to 15 percent over future No Build volumes. Closer to the Marine Parkway Bridge after the FBF diversion points, traffic volumes would decrease by about 450 VPH -- some 12 percent under future No Build volumes. During this period, about 1,000 vehicles or 25 percent of Riis Park-bound motorists would be diverted to FBF to avoid local congestion at the beach area. Traffic decreases along Beach Channel Drive would be most heavily felt in its eastbound direction toward the Riis Park access roads with reductions of some 500 to 520 VPH. The main access roads leading directly to the parking fields toll plaza would experience a decrease of about 590 VPH -- a reduction of approximately 25 to

30 percent below No Build traffic volumes. Other roadways unaffected by FBF diversion would show minor traffic volume increases on other streets within the study area network would typically be in the 10 to 40 VPH range.

During the 6:30-7:30 PM peak hour, traffic volumes would increase to fairly uniform levels in both the inbound and outbound directions above Floyd Bennett Field, directly related to the amphitheater arrivals and water park departures. Flatbush Avenue would carry about 2,200 to 2,500 VPH in each direction (about 1,550 VPH are added to the southbound direction, about 200 VPH are added to the northbound direction), clearly reflecting these balanced traffic flow conditions. Near the Marine Parkway Bridge south of the FBF diversion points, Flatbush Avenue would carry about 1,900 VPH southbound (400 vehicles of which were diverted to FBF) and 2,230 VPH northbound (350 vehicles would rejoin this flow from FBF). Beach Channel Drive traffic would increase by about 1,250 to 1,300 VPH in the eastbound direction as amphitheater attendees seek access to parking areas, while the westbound traffic would increase by about 230 VPH as the remaining water park and beach users leave the peninsula. Westbound Rockaway Beach Boulevard volumes would rise by approximately 170 VPH, while in the eastbound direction, the Boulevard would only carry an additional 70 to 80 VPH.

Traffic volumes and levels-of-service are presented for the major roadways in Figures 7 through 9 for the AM and PM peak hours. Described below are operating conditions along the major arterials in the study area.

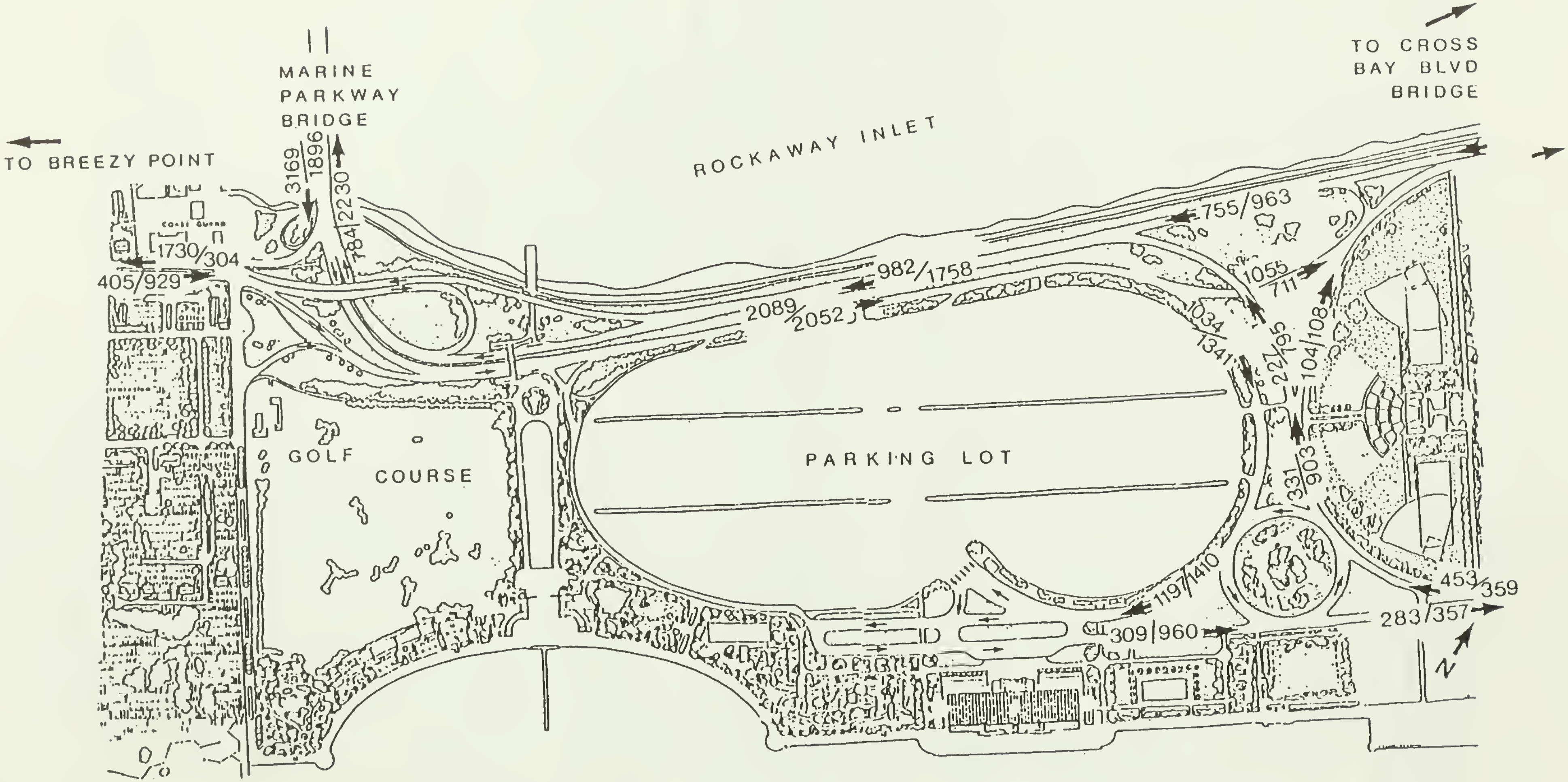
- Flatbush Avenue would continue to operate acceptably at level-of-service C to D, with short-term congestion and delays continuing -- the corridor has ample travel capacity to absorb the traffic increment associated with the project. Vehicular weaving at the Belt Parkway interchange would slightly intensify; however, queueing onto and off of the Belt Parkway is not expected to result during either peak period. Signalized intersections to accommodate Floyd Bennett Field parking areas would operate acceptably at levels-of-service C-D.

- Marine Parkway Bridge vehicular activities would continue to operate at slightly congested though acceptable levels-of-service C to D, particularly in the peak travel direction (i.e., beach-bound in the morning, Brooklyn-bound in the afternoon). This is partially based on the narrow roadway widths and lack of proper traffic control measures at the bridge's south end. However, the short-term nature of this slight traffic flow congestion would be acceptable given the presence of adequate traffic control measures. It is note that this narrow facility would particularly benefit from the vehicular diversion to Floyd Bennett Field as an effective means to reduce travel demand and potential congestion along this corridor.

- Beach Channel Drive, with the Gateway area, would typically operate at acceptable levels of traffic operations (i.e., level-of-service A) throughout the day.

- Rockaway Beach Boulevard Traffic Circle would continue to experience some minor weaving congestion as this traffic hub will serve as the focus of inbound and outbound movements. This is partially based on the short weave distance (i.e., the roadway section between merge-diverge areas, typically requiring lane changing maneuvers) at various points within the circle. In the morning inbound peak period, traffic operations would remain at LOS C-D in both No Build and Build conditions for the western weave section in the circle. During the afternoon outbound peak period, Build condition traffic levels-of-service would not deteriorate from LOS C-D experienced in No Build conditions for the southern portion of the circle. It must be noted that this does not reflect unacceptable or severe congestion conditions; rather, the nature of traffic circle operations permits vehicles to be processed -- albeit more slowly at this hub -- without complete long-term stoppages.

- Riis Park Parking Toll Plaza would require five to six toll booths --usually a maximum of four are currently open during peak morning arrival periods -- to be open during peak inbound demand periods to efficiently process arriving traffic.



KEY: X/X = PEAK AM/PM TRAFFIC (VPH)

Figure 7
1989 Future Build Traffic Volumes
(Summer Sunday)

Riis Park Traffic Study

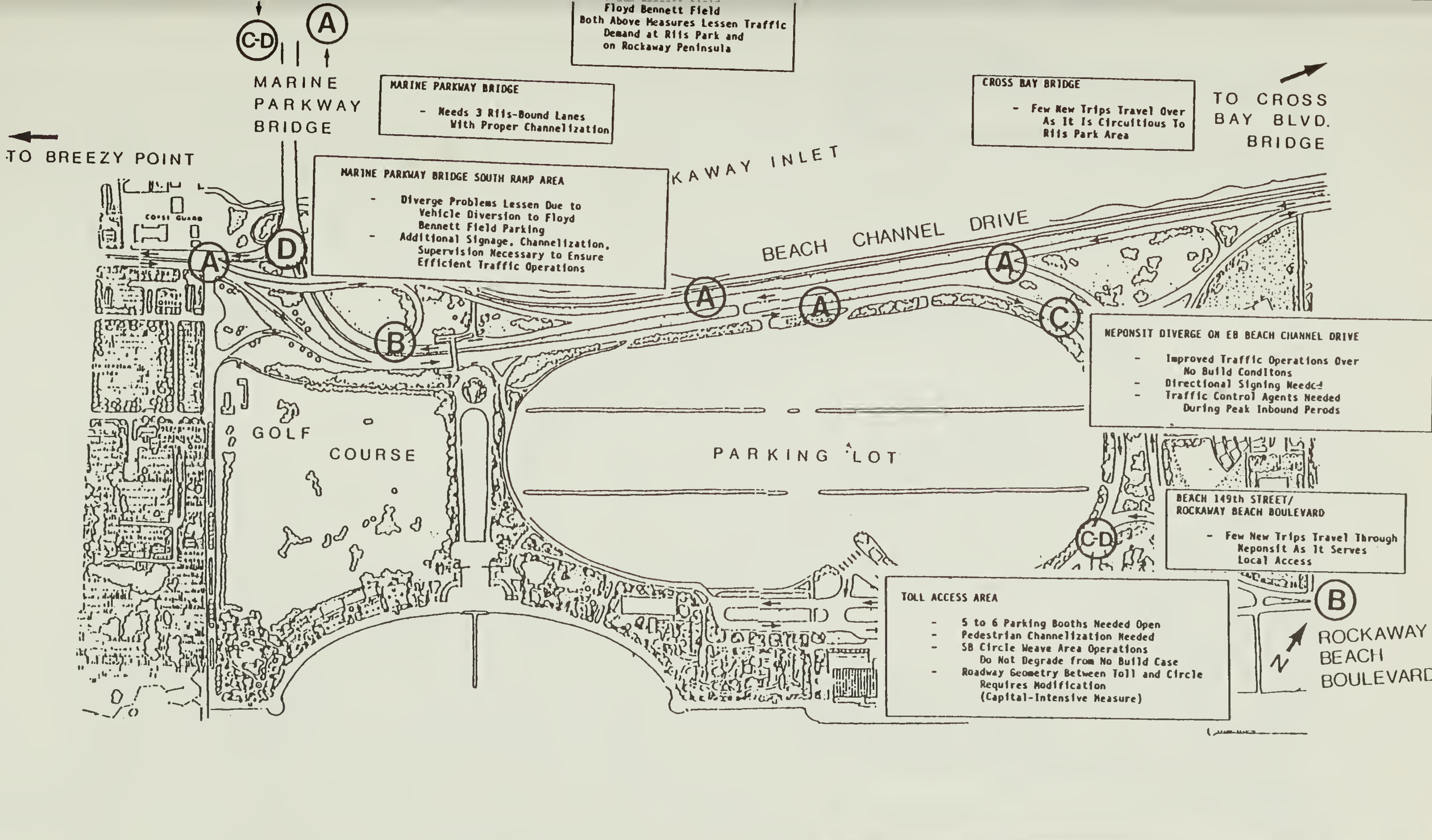
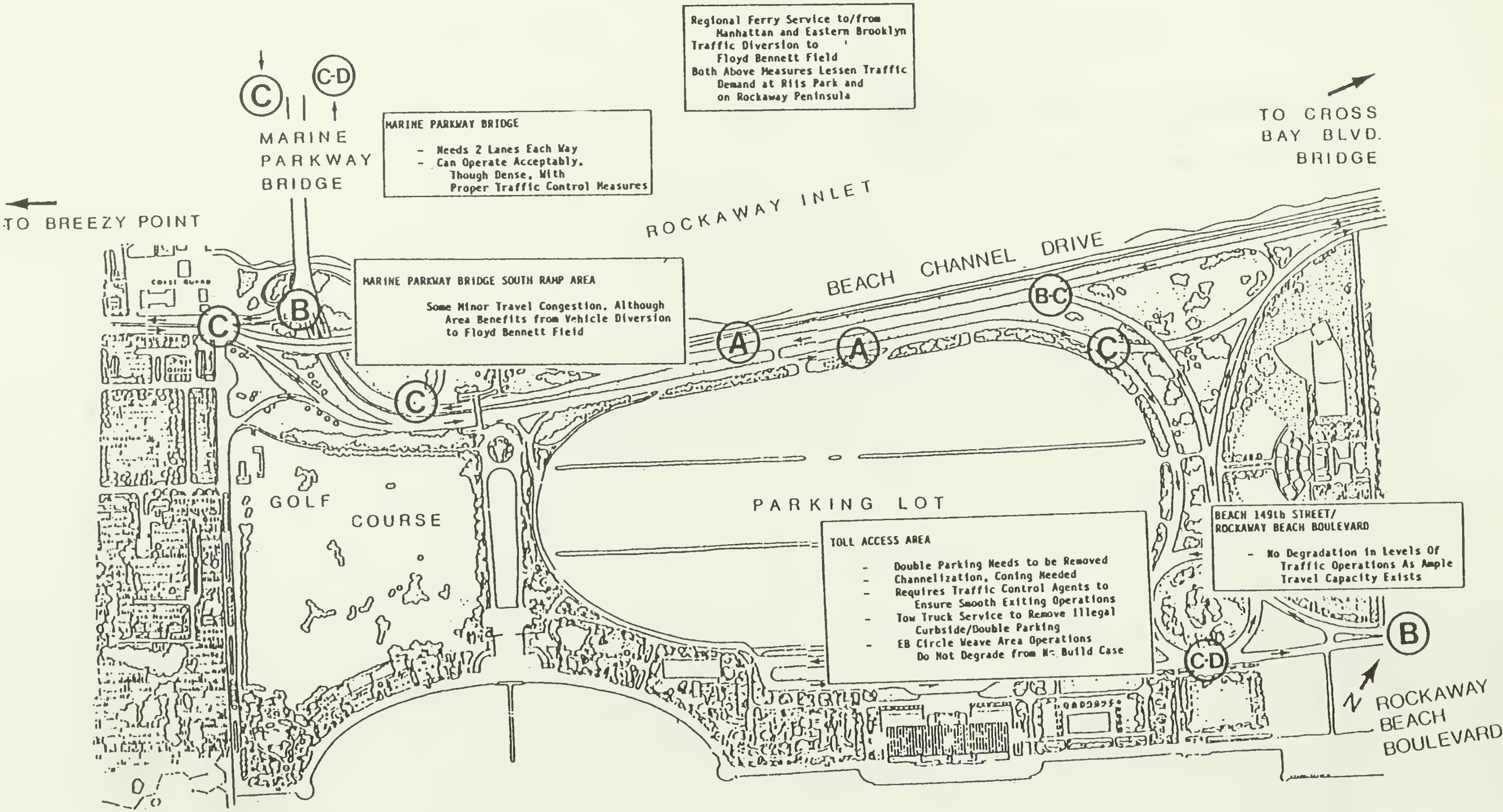

Floyd Bennett Field
Both Above Measures Lessen Traffic
Demand at Riis Park and
on Rockaway Peninsula
C-D
A
MARINE
PARKWAY
BRIDGE
MARINE PARKWAY BRIDGE
- Needs 3 Riis-Bound Lanes With Proper Channelization
CROSS BAY BRIDGE
- Few New Trips Travel Over As It Is Circuitious To Riis Park Area
TO CROSS BAY BLVD. BRIDGE
TO BREEZY POINT
MARINE PARKWAY BRIDGE SOUTH RAMP AREA
- Diverge Problems Lessen Due to Vehicle Diversion to Floyd Bennett Field Parking
- Additional Signage, Channelization, Supervision Necessary to Ensure Efficient Traffic Operations
KAWAY INLET
BEACH CHANNEL DRIVE
A
D
A
A
A
B
C
NEPONSIT DIVERGE ON EB BEACH CHANNEL DRIVE
- Improved Traffic Operations Over No Build Conditons
- Directional Signing Needed
- Traffic Control Agents Needed During Peak Inbound Perods
GOLF
COURSE
PARKING LOT
BEACH 149th STREET/
ROCKAWAY BEACH BOULEVARD
- Few New Trips Travel Through Neponsit As It Serves Local Access
C-D
TOLL ACCESS AREA
- 5 to 6 Parking Booths Needed Open
- Pedestrian Channelization Needed
- SB Circle Weave Area Operations Do Not Degrade from No Build Case
- Roadway Geometry Between Toll and Circle Requires Modification (Capital-Intensive Measure)
B
N
ROCKAWAY BEACH BOULEVARD
KEY: → - TRAFFIC DIRECTION
O - TRAFFIC LEVEL-OF-SERVICE

Figure 8
1989 Future Build AM Travel Conditions (Summer Sunday)

Riis Park Traffic Study



Regional Ferry Service to/from Manhattan and Eastern Brooklyn
Traffic Diversion to Floyd Bennett Field
Both Above Measures Lessen Traffic Demand at Riis Park and on Rockaway Peninsula

MARINE PARKWAY BRIDGE

- Needs 2 Lanes Each Way
- Can Operate Acceptably, Though Dense, With Proper Traffic Control Measures

MARINE PARKWAY BRIDGE SOUTH RAMP AREA

Some Minor Travel Congestion, Although Area Benefits from Vehicle Diversion to Floyd Bennett Field

TOLL ACCESS AREA

- Double Parking Needs to be Removed
- Channelization, Coning Needed
- Requires Traffic Control Agents to Ensure Smooth Exiting Operations
- Tow Truck Service to Remove Illegal Curbside/Double Parking
- EB Circle Weave Area Operations Do Not Degrade from No Build Case

BEACH 149th STREET/
ROCKAWAY BEACH BOULEVARD

- No Degradation in Levels Of Traffic Operations As Ample Travel Capacity Exists

KEY: → - TRAFFIC DIRECTION

Figure 9
1989 Future Build PM Travel Conditions (Summer Sunday)

Riis Park Traffic Study

V. PROBLEM IDENTIFICATION AND MITIGATION MEASURES

o Flatbush Avenue/Marine Parkway Bridge Corridor:

Although water park trip generation along this corridor appears to be within currently available roadway capacities and there are very few affected roadside land uses, there are some areas of concern. The south end of the Marine Parkway Bridge must be channelized to carry at least two lanes of traffic toward Riis Park at all times. This will entail proper placement of traffic cones, pavement markings, signage, and possibly median barrier reconstruction. Currently, this area is improperly controlled and has a high accident potential as vehicles maneuver off the bridge. With the increase in traffic associated with water park users, the bridge must allow for three inbound (i.e., Park-bound) lanes during the morning peak arrival period. (One traffic lane outbound toward Brooklyn would be sufficient to process departing weekend morning northbound vehicles.) Additionally, directional signing and trail blazer panels for the water park and amphitheater must be strategically posted on the Belt Parkway and along Flatbush Avenue.

As discussed earlier, a key measure to be implemented for this corridor would entail a diversion of arriving vehicles to satellite parking at Floyd Bennett Field with shuttle bus service on-hand to provide transport to and from beach areas. Variable message signing would be required along the southbound direction to alert arriving motorists of the availability of Floyd Bennett Field parking. During peak travel periods, about between 20 and 30 percent of general Riis Park arrival motorists (approximately 1,000 VPH in AM peak hour; 350-500 VPH in PM peak hour) would require diversion to FBF to ensure acceptable levels of traffic operations throughout the study area.

Concern must also be directed to amphitheater event start times. If concert start times are too early, the four lanes of the Bridge may not be sufficient to carry both and inbound and outbound demand. Event start times of no earlier than 8:00 PM would assist in limiting potential congestion conditions over the bridge.

o Cross Bay Boulevard/Cross Bay Bridge Corridor:

This corridor appears to be near roadway capacity limits and, as such, significant additional trip-making activities directed or assigned to these streets must be minimalized. Directional signing along the westbound Belt Parkway should direct the motorists to bypass Cross Bay Boulevard and use Flatbush Avenue as a means of access to the development. It must be noted, however, that a relatively small percentage (about 12%) of the total user population would use this corridor and any adverse effects would thus be minimally felt.

o Riis Park Parking Area Toll Plaza:

Vehicle queueing and congestion within this area can be reduced with the addition of directional signing advising approaching motorists to use all travel lanes, as well as effective channelization techniques including clear pavement markings and lane coning. During peak inbound periods, traffic control agents or other supervisory personnel should be strategically positioned -- at the eastbound Beach Channel Drive/Neponsit diverge, at the Rockaway Beach Boulevard traffic circle western weave area, at the main parking toll plaza area -- to facilitate arriving and perhaps confused motorists. The addition of development-related traffic may worsen this congestion and may eventually require some capital-intensive improvement measures should the aforementioned traffic control measures prove to be insufficient, including: 1) roadway widening to allow an extra travel lane for about 1,500 to 2,000 feet prior to the toll plaza; 2) overhead variable lane signalization to inform the approaching motorist of toll booth openings; and 3) toll plaza expansion to accommodate the increased development traffic. A slightly different capital-intensive mitigation technique would involve an additional toll area within the parking fields along the peripheral roadway to be accessed from eastbound (i.e., inbound only) Beach Channel Drive prior to the present toll plaza.

Pedestrians frequently interfere with roadway operations through this area and, as such, channelization must also be considered at the parking lot point of origin -- that is, pedestrians' movements must be controlled and directed before they exit the parking lot. This will entail fence repair and replacement (pedestrians frequently pass through broken fence sections); in-lot channelization to guide and encourage beach-goers into using the existing underground walkway (which would involve clear, visible signing and re-painted pavement walkways); and possible elimination of auxiliary and rarely used driveways to the east of the main toll plaza (these driveways also allow pedestrians to enter and cross access roadways and interfere with traffic operations). Additionally, traffic control agents or supervisory personnel within the parking lot can be stationed to direct pedestrians to the proper route to the beachfront.

o Rockaway Beach Boulevard Traffic Circle:

Although this type of roadway configuration can be highly effective in processing vehicles, it is prevented from doing so at Riis Park for a variety of reasons. The eastbound park access road approaching the traffic circle is constantly plagued by illegal dropoff/pickup activities at the curbside and double-parked positions, both of which usurp travel space and severely hamper efficient traffic operations. These activities currently result in congestion as far back as the parking fields at peak departure periods. Increased enforcement through the use of traffic control agents at this location, particularly during the afternoon hours, will allow expeditious exit from the area. As an added measure, towing service to remove ticketed or persistent violating parkers would ensure maximum travel space in this area.

At this location, the approaching motorist is presented with a variety of travel path decisions, each of which must be made within a short distance. Proper directional signing throughout this traffic hub is virtually non-existent and must be provided at each strategic diverge point within each weave section in the circle.

Additionally, after amphitheater concert events, traffic control agents must be positioned throughout the area directing exiting vehicles to their logical path. This can effectively prevent unwanted and misdirected regional traffic from travelling through residential areas such as Neponsit and Belle Harbor.

- Additional Concerns

1. Golf Course Relocation - The existing golf course facility, located in the western portion of Riis Park, would be reconstructed in the open space directly west of Beach 149th Street and between Rockaway Beach Boulevard and Beach Channel Drive. While not a major traffic generator, there are a number of travel concerns that must be addressed. The facility should have easy access within the course layout to allow dropoff/pickup activities to be made off-street. If land is available, parking spaces should be self-contained within the confines of the new golf course properties. If unavailable, safe passage for crossing golfers (across the beach access roads), who would park in the existing parking fields, must be provided for. Traffic signal controls would be unfavorable and prove to be very disruptive -- perhaps even unsafe -- to the approaching motorist as ample sight distance does not exist on these curving roadways. Instead, consideration must be given to either underground or overhead pedestrian walkways to ensure safe and controlled movements to both motorists and golfers.

2. Commuter Ferry Operations - Projected ferry operations would have local service originating from a dock area opposite the existing Riis Park pedestrian mall, which lies in between the existing golf course and parking lot. Currently, there is an existing pedestrian overpass that would adequately serve potential ferry users. At-grade signalized crossings along Beach Channel Drive were considered as a means to accommodate crossing pedestrians. This, however, may prove to be interruptive to the generally free-flow vehicular conditions along the drive. Additionally, the urge of the pedestrian to dart through moving traffic should green signal time be unavailable would be hazardous. Therefore, it is recommended that the use of the existing overhead walkway be encouraged as a safe and effective means of transporting pedestrians across Beach Channel Drive without adversely affecting roadway operations.

VI. CONCLUSIONS

This traffic impact assessment indicates the following broad conclusions:

1. The analyses presented in this document include, as part of the Future Build condition, the implementation of extensive transit services (including ferry and express/charter bus) and the availability of Floyd Bennett Field as a satellite parking field. These vehicle traffic reduction techniques are necessary to ensure acceptable levels of peak period traffic operations throughout the Riis Park surrounding roadways.

2. Trip generation for the major water park and amphitheater project components appear to be within currently available roadway capacities, although some travel congestion would occur at several locations. The south end of the Marine Parkway Bridge must be properly channelized to accommodate the various major inbound and outbound traffic flow periods. The park access roads leading to and from the Riis Park parking fields must also be properly channelized with traffic coning and signage, pavement markings, and supervisory personnel. The parking fields toll plaza must be in operation with five to six toll lanes during peak inbound periods.

3. If needed, capital-intensive improvement measures at the parking field's access roads and toll plaza could include: 1) roadway widening to allow an extra travel lane for about 1,500 to 2,000 feet prior to the toll plaza; 2) overhead variable lane signalization to inform the approaching motorist of toll booth openings; and 3) parking toll plaza expansion. Additional toll areas within the parking fields along the peripheral roadway via eastbound Beach Channel Drive is another major improvement measure available for consideration. However, these measures would only be considered if the aforementioned transportation system management techniques (i.e., use of transit encouragement, traffic diversions to FBF,

signage, coning, striping control agents, etc) prove to be insufficient during the initial stages of development operations.

4. Rockaway Beach and Rockaway Point Boulevards would be expected to carry little development-related traffic, as these streets generally lead to local residential areas such as Neponsit and Breezy Point. Additionally, a major fuction of traffic control and supervisory personnel would be re-direction of vehicles away from these areas toward the major access/egress roadways, such as Beach Channel Drive and Flatbush Avenue, to minimize the local area impacts.

5. Concern must be directed to amphitheater event start times. If concert start times are too early, the four lanes of the Marine Parkway Bridge may not be sufficient to carry both inbound and outbound demand. Later event start times of no earlier than 8:00 PM would assist in limiting this potential congestion condition over the bridge.

BIBLIOGRAPHY

BIBLIOGRAPHY

Beyer, Blinder, Belle, Architects & Planners

1983 Adaptive Use Studies, Jacob Riis Bathhouse, Gateway National Recreation Area. New York, December 1983. Prepared for National Park Service, Denver Service Center.

1984 Existing Conditions Study, Jacob Riis Bathhouse, Gateway National Recreation Area. New York. Prepared for National Park Service, Denver Service Center.

Cohen, Urial et. al.

1979 Recommendations for Child Play Areas. The School of Architecture and Urban Planning, The University of Wisconsin-Milwaukee, 1979.

Jaffe Acoustics, Inc.

1987 Riis Park Amphitheatre, Site Study.

John Milner Associates

1978 A Cultural Resources Inventory of the Gateway National Recreation Area, New York and New Jersey. West Chester, Pennsylvania. Prepared for National Park Service, Denver Service Center

Morrisey-Johnson, Consulting Engineers

1980 Waterborne Transportation Study, Coney Island to Breezy Point, Gateway National Recreation Area. New York. Prepared for National Park Service, Denver Service Center.

Parsons Brinkerhoff Quade & Douglas, Inc.

1987 Riis Park Traffic Study, Technical Memorandum I, Phase One, Preliminary Investigation. July.

Parsons Brinkerhoff Quade & Douglas, Inc.

1988 Riis Park Traffic Study, Technical Memorandum II, Phase Two, Traffic Impact Assessment (revised). February.

Project for Public Spaces, Inc.

1977 Riis Park Study. New York.

1978 Jacob Riis Park: A Pilot Project in Park Renewal (film). New York.

U.S. Department of the Interior, National Park Service

1975 "Special Study, The 1974 Summer Session, Gateway National Recreation Area, New York-New Jersey," Prepared by William Kornblum, CUNY. New York.

1978 "Interpretive Prospectus, Gateway National Recreation Area, New Jersey-New York." Harpers Ferry Center, Harpers Ferry, West Virginia.

1970 "Historic Structures Report, Historic Data Section, Fort Tilden, Gateway National Recreation Area, New York." Prepared by Louis Torres, Denver Service Center.

1979 "Historic Structures Report, Jacob Riis Park Historic District, Historical Data Section, Gateway National Recreation Area, New York." Prepared by Denver Service Center.

1981 "Historic Structures Report, Archeological Data Section, Jacob Riis Park, Gateway National Recreational Area, New York." Prepared by Dana C. Linck, Denver Service Center.

1981 "Historic Structures Report, Archeological Data Section, Fort Tilden, Gateway National Recreation Area, New York." Denver Service Center.

1983 "Development Concept Plan and Environmental Assessment. Floyd Bennett Field, Gateway National Recreation Area." Prepared by Denver Service Center.

1986 "Historic Structures Report, Architectural Data Section, Jacob Riis Bathhouse Exterior, Jacob Riis Park Historic District, Gateway National Recreation Area, New York." Prepared by John B. Marsh and Sally Small, Denver Service Center.

PLANNING TEAM

DSC

Dennis Piper, Team Captain, Landscape Architect/Planner

Michael Wilderman, National Resources Specialist

Kathleen Wenskus, Visual Information Specialist

George Nez, Economist

Craig Cellar, Cultural Resource Planner

William Howell, Historical Architect

Michael Adlerstein, Architect, new York Coordinator

Park

Robert McIntosh, Superintendent

Joe Avery, Assistant Superintendent, Jamaica Bay/Breezy Point Unit

North Atlantic Regional Office

Terry Savage, Chief, Division of Planning and Design

Rolf Diamant, Planning Coordinator

Consultants

William Kornblum, Ph.D., C.U.N.Y. Graduate Center, Sociologist

U.S. GOVERNMENT PRINTING OFFICE: 1988—573-038/60,018 REGION NO. 8

DATE DUE

MAR 2 3 1993

APR 5 1993

[illegible]

DEMCO, INC. 38-2931

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics and editorial staffs of the Denver Service Center. NPS 2212B March 1988